- - - Index to Contents, March, 1937 - - -

The Annual Index to Vol. LI appears on the last eight pages of the December, 1936, issue

Airports and Landing Fields
Pulling Out Stumps for Airport, Everett.. 15
Municipal Airports and Federal Responsibility 15
Airports and Landing Fields in the United States 15

Business Machines
Modern Office Appliances..... 71

Conferences and Conventions
International Conferences on Municipal Government and Housing and Town Planning 71
Conventions—When and Where..... 123
Asphalt Conferences Start Again..... 125

Finance and Assessment
Recoupment of Public Costs..... 5
Flint's Tax Collecting Has Been Modern Since 1926..... 91
Taxpayer and City Pleased with Quadrennial Assessment..... 93
Instalment Payment of Taxes..... 101
Financial Service to Local Industry..... 105
Infrequent Assessments Held Mistaken Economy 111
National School Proposed for Municipal Finance Officers..... 113
The Municipal Bond Market..... 113

Fire Prevention and Control
New York Starts 3-Platoon System..... 17
Flood Conditions Test Radio..... 17

Floods
The Warning of Floods..... 5
Recoupment of Public Costs..... 5
Flood Conditions Test Radio..... 17
Flood Control and the Cities..... 55
Keeping the Floods from the Cities and the Cities from the Floods..... 56
Does Flood Protection Pay?..... 57
Mayors' Conference Thanks Cities and Officials for Aid in Flood-Stricken Areas... 59
Organization for Sanitary Surveys of Flooded Areas..... 95
How a Flood-Safe City Helped the Less Fortunate 103
Water-Damaged Tracings Restored..... 129

Forward Steps
Items Contributed by Officials and Others. 101

Government and Administration
Municipal Airports and Federal Responsibility 15
A Mayor's Annual Message..... 83
Council-Manager Government Suits Port Arthur 97
Helping Citizens to Learn About Their Government 101
How Will the "Trailer-Home" Be Governed? 111

Health and Sanitation
The Warning of Floods..... 5
Recoupment of Public Costs..... 5
Dust Storms and Their Possible Effect on Health 19
Model Ordinance Requires Sterile Dishes at Cafes..... 19
Education, the Basis of All Health Programs 19
Organization for Sanitary Surveys of Flooded Areas..... 95

Housing
27 States Still Lack Laws for Housing Program 87
A Brief Summary of the Wagner-Steagall Housing Bill..... 87

Improving Municipal Administration
Items from the Public Administration Clearing House..... 111

Legal Decisions
The City's Legal Rights and Duties..... 117

Motor Equipment
Evanston Has Radio Ambulance..... 17

News and Illustrations
Hints for Officials..... 125

Outdoor Lighting
Open-Type, Long-Range Aluminum Floodlights 127
$3,000,000 for Detroit Street Lighting..... 131
Better Lights Are Coming..... 132
Night Hazards Growing Worse; The Remedy 135

Parking Meters
The Parking Meter Makes Good..... 89

Planning
John Nolen's Vision and Leadership..... 68
Horace M. Albright Heads A.P.C.A..... 105
Zoning and Planning Notes..... 115

Police
Evanston Has Radio Ambulance..... 17
Flood Conditions Test Radio..... 17
Police and Sit-Down Strikes..... 111

VOL. LII MARCH
No. 3 1937

The American City

Issued Monthly by the
American City Magazine Corporation
470 Fourth Ave., New York
EDGAR J. BUTTENHEIM, Pres. & Mgr.
HAROLD S. BUTTENHEIM, Editor
THEODORE R. KENDALL
Secretary and Engineering Editor
M. V. FULLER, Associate Editor
ALDEN W. WELCH, Research Editor
HERBERT K. SAXE
Treasurer
PRENTICE C. FORD, Asst. to President
MYRON MacLEOD, Advertising Mgr.

BRANCH OFFICES
Daily News Building, Chicago
TOM DIX, Vice-President
648 Hanna Building, Cleveland
GEORGE S. CONOVER, Vice-President
Mills Building, San Francisco
DUNCAN A. SCOTT, Representative

Subscription, $2 per annum in United States and Canada ($3 to foreign countries)
Single copies, 35c
Back numbers available

Entered as second-class matter, July 29, 1910, at the Post Office at New York, N. Y., under Act of March 3, 1879. Printed in U. S. A.

In THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

Power and Power Plants
Minnesota Plants Want to Tie Together... 62
Municipality to Sell Electrical Appliances.. 66
No Electricity for 5½ Hours..... 69
Caterpillar Power Helped Louisville..... 129

Publications
New Books and Pamphlets..... 119

Radio
Flood Conditions Test Radio..... 17
Evanston Has Radio Ambulance..... 17

Recreation
Shuffleboard Comes to Land..... 105

Riverfront
Riverfront, Evansville, Ind.....Cover
A River-Front Transformed..... 101

Sewers
Chicago Saves the Day—Files Compliance Report 11
Poplar Roots Are Still Unpopular..... 11
Sewage Plant Made Beauty-Spot..... 11
New Sewage-Treatment Plant Built to Be Attractive 60
Non-Clogging Pumps for Full-Time Service. 125

Streets
Safer Motoring in Bridgeport..... 67
Toronto's Municipal Asphalt Plant and Patching Practice 75
Plant-Mixed Low-Cost Pavements..... 79
Street-Car Tracks Are Coming Up..... 85
Asphalt Conferences Start Again This Year. 125
New Adhesives for Street Markers..... 127
New Highway Flare..... 129

Strikes
Police and Sit-Down Strikes..... 111

Traffic
Safer Motoring in Bridgeport..... 67
How Kansas City Designs Safety Zones.... 107
Car Inspection in Chicago..... 107
Automobile Storage Facilities in Chicago's Business District..... 109
Philadelphia Directs Traffic from Roof or High Building 109
The Traffic Engineer..... 109
Stop-and-Go Signals to Flash at Night..... 109
New York's New Code..... 109
New Adhesives for Street Markers..... 127
New Safety Campaign of Indian Motocycle 127
New Reflecting Marker for Center Stripes. 127

Trailers
How Will the "Trailer-Home" Be Governed? 111

Transportation
Transportation Needs of the Cities..... 7

Waste Collection and Disposal
Cleanly Ash and Garbage Collection in Binghamton, N. Y..... 13
Garbage Collection Costs in Pasadena.... 13
Graders Stack Leaves in Gutters..... 13
To the Taxpayer..... 13
Combined Wastes-Disposal Plant in Operation at Herkimer, New York..... 63
Refuse Collections Costs in Columbus, Ohio 73

Water Supply and Water Works
What Is Cheaper Than Dirt?..... 9
Buying Water Meters..... 9
New Water Supply for Safford, Ariz..... 9
Gravity Pressure to High District with New Steel Tank..... 72
Deep-Well Problems 77
New Small Filtration Plant Gives Complete Treatment 81
Hot Water Cooled for Domestic Use..... 99
Fort Wayne Water Department Digs Up Lead Service Laid in 1881..... 99
Pumping Plant Enlarged at Chino..... 129

See pages 21, 23, 119 and 121 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 138

IN BRISTOL, VIRGINIA

"THE TWIN CITY" TENNESSEE

Nestled in a valley between the Cumberland and Blue Ridge Mountains and located squarely on the State Line between Virginia and Tennessee, Bristol, although one community, is in reality a two-state city. While its civic organizations have but one body, it has two mayors, two city councils, two chiefs of police—in fact, a "pair" of all political officials. Elevated 1,700 feet above sea level and having an average temperature of 61 degrees, Bristol's slogan is "A Good Place To Live."

Bristol is a progressive industrial city. One of the largest overall factories in the world is located here. Other industries produce lumber products, paper, hosiery, women's clothing, trailers and mine cars. In the beautiful surrounding country the chief agricultural products are tobacco, corn, wheat, dairy, poultry and produce from general farming.

Both City Water Departments are users of Pittsburgh Water Meters, Bristol, Tennessee, having purchased 3,000 in 1936.

PITTSBURGH EQUITABLE METER CO.
MERCO NORDSTROM VALVE CO.
MAIN OFFICES PITTSBURGH, PA.

NEW YORK	LOS ANGELES	TULSA	HOUSTON	MEMPHIS	BUFFALO
COLUMBIA	KANSAS CITY	CHICAGO	PHILADELPHIA	ATLANTA	OAKLAND

PITTSBURGH WATER METERS

Planning for Prevention and Relief

THE recent disastrous floods in the Ohio Valley have emphasized the urgent need for future planning both for prevention and for relief. Important phases of these two problems are discussed in articles on page 55-59 and 95 of this issue.

As a supplement or preface to these articles it is fitting to quote from an editorial in "The Cincinnati Engineer and Scientist," whose editor, Paul H. Goodell, pays a just and glowing tribute to the valiant part played by engineers in the recent flood in that city:

"Among those for whose indispensable efforts the entire community must be particularly grateful are the employees of the public utilities supplying water, electricity, communication, transportation and gas. Many others among our ranks have volunteered for duty in the Red Cross and other rescue activities all of which are certain to assure our profession of a position of increasingly high regard.

"With sixty billion tons of turbulent water sweeping ruthlessly down the Ohio Valley, devastating everything in its path, Cincinnatians put all of their faith in the group of engineers . . . ., and the extent to which these men responded is indicated by the fact that all of the utility services were maintained virtually at normal until within 5 feet of the 79.99-foot crest, when sand bags and temporary dikes protecting pumps, boilers and other essential power equipment could hold out no longer.

"Engineering has bravely met the emergency, however. At no time was Cincinnati completely without any of its essential public services. These were rightfully conserved for hospitals radio stations, and other vital uses, but even this restriction shall not again recur from any similar cause if the necessary confidence to bring about flood control which has been earned in this emergency is bestowed upon engineering and science."

The citizens of Cincinnati were unstinting in their praise of C. A. Dykstra, City Manager, who was given dictatorial powers by the city administration during the flood crisis. That this faith was not misplaced is shown by the remarkable speed with which all municipal functions regained approximately normal operation as the flood waters receded, and the efficient organization for clean-up which so quickly restored sanitary conditions throughout the flooded area of Cincinnati. Many other cities which suffered from the floods were also thankful for the fine municipal engineering organizations which bore the brunt of emergency activities and so rapidly restored the communities to a livable condition.

Recoupment of Public Works Costs

IN its report on "Public Works Planning," released last month, the National Resources Committee devotes an important section to the Division of Costs and Responsibility for Public Works. From this 84-page analysis of the problem the following brief excerpt is quoted:

"The construction of dams, highways, bridges, schoolhouses, sidewalks, or almost any other public work, for example, confers special benefits upon people living in given regions or owning property nearby or adjacent to such improvements. It is these non-universal gains which determine whether projects are to be characterized as regional, national, state or local in character. Moreover, there are similar special advantages conferred upon fortunately situated individuals by the construction of many of these projects. Special advantages from ordinary public activities are usually windfalls. Similarly, gains from the construction of public improvements are sometimes made the occasion for special assessments, particularly in the field of municipal government. It is perhaps fitting that the Federal Government should be allowed to recoup a portion or all of the benefits locally conferred by its improvement project (and the same reasoning would apply to other governments). These benefits accrue to individuals and not to state and local governments. If these recoupments are to be made, special charges in the nature of special assessments must be imposed. Their imposition may require the creation of special districts whose boundaries coincide with no existing political subdivision. The development of techniques by which the benefits so conferred may be approximately measured will also be required. It is in the measurement of these benefits that special assessment and recoupment projects meet their greatest difficulty.

"If the attempt is made to measure benefits before they accrue, the computations seldom result in the imposition of charges closely approximating the benefits conferred. The annals of municipal finance are full of examples of special assessments that have gone awry. Seldom have the estimators been able accurately to approximate benefits conferred. Sometimes they have erred on the side of asking too little; on occasions too numerous to mention the costs imposed have been far too great. If the attempt is made to postpone the levying of the assessment until such time as the benefit accrues, there is little doubt but that the probability of a future assessment would be so discounted that property values would not reflect the benefits conferred on improvement projects. Thus, the possibility of recouping special advantages from public works by imposing either special assessments or land-increment taxes is limited. The benefits may possibly be reached through additions to income, but in many cases this would involve imputation of hypothetical income instead of the calculation of gains currently realized. In fairness it would require, too, the development of a differential income levy involving many additional complications. In spite of these practical difficulties the ethics of recoupment cannot be questioned."

WE TOO *Chart a Course*

FOR 54 YEARS "THE WORLD'S LARGEST WATER DEVELOPERS"

AFFILIATED COMPANIES

LAYNE-ARKANSAS CO. . STUTTGART, ARK.
LAYNE-ATLANTIC CO. . . . NORFOLK, VA.
LAYNE-CENTRAL CO. . . . MEMPHIS, TENN.
LAYNE-NORTHERN CO., MISHAWAKA, IND.
LAYNE-LOUISIANA CO., LAKE CHARLES, LA.
LAYNE-NEW YORK CO. . . NEW YORK CITY.
LAYNE-NORTHWEST CO., MILWAUKEE, WIS.
LAYNE-OHIO CO. . . . . COLUMBUS, OHIO.
LAYNE-TEXAS CO. . . . HOUSTON, TEXAS.
LAYNE-WESTERN CO. . KANSAS CITY, MO. CHICAGO, ILL., AND MINNEAPOLIS, MINN.
LAYNE-BOWLER NEW ENGLAND COMPANY, BOSTON . . . . . MASSACHUSETTS.
INTERNATIONAL WATER SUPPLY, LTD., FORT ERIE, N. . . . . ONTARIO, CANADA.

That same carefully charted course that began with Layne & Bowler, Inc., in 1883, is today the guiding factor with "The World's Largest Water Developers." Why not take advantage of this widely experienced and internationally recognized water developing organization for the solving of your water production problems?

Municipal executives whose 1937 plans call for more water, should call in a Layne hydrological engineer. No obligation. For illustrated literature, write Layne & Bowler, Inc., Dept. B, Memphis, Tenn.

LAYNE PUMPS
LAYNE WELL WATER SYSTEMS

When you write for that catalog, kindly mention THE AMERICAN CITY.

The Local Transit Problem

Transportation Needs of the Cities

IT has frequently been said that local transportation is unsatisfactory in half of the cities in the country. This estimate checks closely with the actual facts developed by the careful survey conducted by THE AMERICAN CITY with the cordial cooperation of mayors, city managers and municipal utility officers. For example, of 101 cities making definite statements of their needs, 48 reported that they are now adequately served, and 53 cities presented their specific needs.

Alhambra, Calif., needs "more routes from residential sections to business center, but we cannot prove that such routes will pay." This is the need also of St. Paul, Minn.; University City, Mo.; Durham, N. C.; Elkhart, Ind., and Los Angeles, Calif. St. Paul admits that the regions requiring development will not pay the costs of operation. University City points out that "the tendency now is for the mass-transportation companies to only want to go into already highly developed areas that become immediately profitable instead of the former system of the transportation lines helping to build the neighborhood." While this is a very natural business viewpoint for a company to have, it does not augur a long future of satisfactory local relations. It gives point to the city of Camden's tersely stated need for "a municipally owned and operated transportation system." Durham, N. C., also qualifies its desire with "However, the sections are not thickly populated and due to the use of privately-owned cars would not make the transportation business profitable. How far a company can now go in developing new areas probably depends upon the city's response to such effort.

Fare and schedules were mentioned by only a few of the cities. Reduction in fares is suggested by Binghamton, N. Y., and LaCrosse, Wis. Glendale, Calif., wants uniform fares in the city. Lakewood, Ohio, wants universal transfers. In Hamilton, Ohio, a bus company "succeeded the former trolley system and there are three independent bus operators, all operating independently and without transfers." Dayton wants consolidation of the six separate street-car companies operating here.

Twenty-one cities call rather unequivocally for substitution of gasoline motor-buses for street cars. Says Miami: "It is our opinion that a city-wide modern bus-transportation system is the prime requirement of our growing city transportation problem, and we are proceeding in this direction and to this end." It is interesting to note that East Providence, R. I., which has seen and felt the popularity of Providence's trolley-coach system, wants "substitution of the trackless trolley for the present gasoline buses and trolleys."

The first requirement on the list is not predicated on any particular type of vehicle. Glendale, Calif., for example, wants: (1) extension of service into newly developed territory; (2) uniform fares as now being tried out until July 1; (3) better facilities and rapid interurban service. Long Beach, Calif., says: "Quality and comfort of vehicles are increasingly demanded by the public." Los Angeles wants "replacement of existing antiquated equipment with new equipment." For Washington, D. C., "improved street cars." Lorain, Ohio, is negotiating for an entirely new system, probably buses, owing to the complete run-down of the car lines.

CURB LOADING WITH ELECTRIC DRIVE

Pullman trolley coach with G.E. 2-motor drive on lines of Oakwood Street Railway Co., Dayton, Ohio

It continues to be quite obvious that the new modernized "noiseless" P.C.C. street car, thoroughly known in transportation circles, has never been sold to the city governments or the public. To a considerable extent this is true also of the trolley coach. They have not been sold to those who would use them nor to their representatives who could help to put them over with the public.

That the cities even now are open to the truth is indicated by Edgar Dow Gilman, Director of Public Utilities of Cincinnati: "The principal needs for better local transportation might vary as much as the number of people to whom you might put this question. One person believes that we should abandon all rail operation and go to motor-buses. Another person may believe that we should abandon what buses we have and go back entirely to street cars. Some people believe that all gasoline buses should be changed to trolley-buses, and others believe that trolley-buses will have no place in the future."

Mayor Daniel W. Hoan of Milwaukee demands the elimination of all cars in service more than fifteen years. "Most of such cars rattle, are noisy and cause discomfort to passengers as well as residents along the car lines. Local companies . . . can make for themselves many friends and potentially add to the number of passengers if they will not be stingy in their investments for new, modern, up-to-date equipment. This would have a tendency to discourage the use of the automobile for local transportation purposes and would of course add to the revenue of the transportation revenue."

There are ample indications that today is more propitious than any time in the past for settling transit difficulties and arriving at a modern system on a mutually satisfactory basis. Who's for it?

NEW REO PUSHER BUS IN LANSING, MICH.

Duraluminum frame exchanges dead weight for passengers; easier riding achieved by suspending the rear axle, transmission and motor in the frame thus making them "sprung" load; wide tread and short wheelbase give short turning radius. Airbrakes furnish further safety for this 26-passenger bus.

...ANOTHER 2,000,000 GALLON UNIT FOR BUFFALO!

No city is too large to overlook the advantages of elevated storage.

BUFFALO, N. Y., is one of the many cities that have discovered the advantages offered by large capacity elevated water storage facilities. With the completion of the radial-cone bottom tank shown above, the southern and older section of the city now, for the first time in its history, enjoys really satisfactory service.

This is the second of three 2,000,000-gal. tanks installed at Buffalo. The first was placed in service last year to insure adequate water supply for the eastern portion of the city inland from Lake Erie. The third serves the north section of town. All are similar in design and appearance. The heights of the structures, however, are varied so that the tanks will ride on the system and operate in the same hydraulic plane.

Besides more uniform pressures and adequate supply, one of the most important benefits resulting from this modernization program is the greater protection afforded against fire. In recent years this had become a serious problem — particularly in the district now served by the tank illustrated above.

For complete information on the advantages of elevated storage, address our nearest office.

CHICAGO BRIDGE & IRON COMPANY

Chicago.....2127 Old Colony Bldg.
New York.....3308-165 Broadway Bldg.
Cleveland.....2236 Rockefeller Bldg.
Detroit.....1501 Lafayette Bldg.
Philadelphia..1616 "1700" Walnut St. Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth Street
Dallas.....1406 Dallas Athletic Club Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Hunt Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Economy in Water Supply

New Water Supply for Safford, Arizona

A WATER-SUPPLY system, estimated to cost $496,364, for the town of Safford, Graham County, Ariz., having a population of 1,706, is to be built with a PWA grant of $178,364 and a loan of $318,000. Twenty-one miles of pipe line is to be laid from Bonita Canyon Creek, passing through San Jose, Solomonville, and Lone Star, serving those communities as well as Safford and Thatcher.

The present water-works system in Safford is obsolete, and serves only a part of the town and the adjacent district. It is to be purchased from a private corporation out of the Government loan. Usable portions of the entire system are to be reconditioned and incorporated in the new system. The present system gets its water from the nearby Graham Mountain.

The new system will comprise a 10-inch pipe line 21.75 miles long from Bonita Canyon Creek. The upper end of the pipe line is to be 453 feet above Safford. Water will be carried by gravity to a 100,000-gallon tank 120 feet high in Safford.

A concrete cut-off wall is to be constructed at the intake works on Bonita Canyon Creek. This will be carried approximately 15 feet down to bed-rock. On the upstream side of this concrete wall, 150 feet of 18-inch tile pipe connecting with a valve chamber is to be laid at a depth of 15 feet. From this 18-inch pipe a pipe collection system will be laid. At the valve chamber the flow is controlled by a 10-inch valve. From this chamber a 10-inch pipe will lead to Safford.

In Bonita Canyon the pipe line will be laid to a depth of 5 feet except where it crosses the creek, where it will be laid at a depth of 7 feet. After the pipe line leaves the canyon, it will be laid at a depth of 2 feet, and the backfilling will be crowned over the pipe. In Safford a cast iron distribution system is to be constructed, including fire hydrants and valves.

In August, 1935, there were 873 meters and 1,004 connections in Safford, Thatcher and vicinity. One hundred and forty additional customers are expected from San Jose, Solomonville and Lone Star.

Buying Water Meters

WITH break-down tests conducted over a period of years, the Water Department of El Paso, Texas, according to Frank M. Murphy in a paper presented before the Southwestern Section of the American Water Works Association, has proved to its satisfaction that a water department gets in a meter only what it pays for. Mr. Murphy says: "Do not buy competition meters. Most of these cheap measuring devices are put in by the contractor on the original installation, his only interest in the welfare of the project being a bid low enough to get the contract, or by some board of councilmen who do not know the difference. You can be sure of only one thing when using them—the water department always takes the loss.

"In the larger size service, a battery of 2-inch meters gives the best service. We arrived at this conclusion by running them in tandem with large meters, and have yet to find a condition where the battery will not increase the revenue.

"On fire line services, the installation of a detector check will show you that these services are not as inactive as you might think. The detector meter pays dividends in leaks and stolen water."

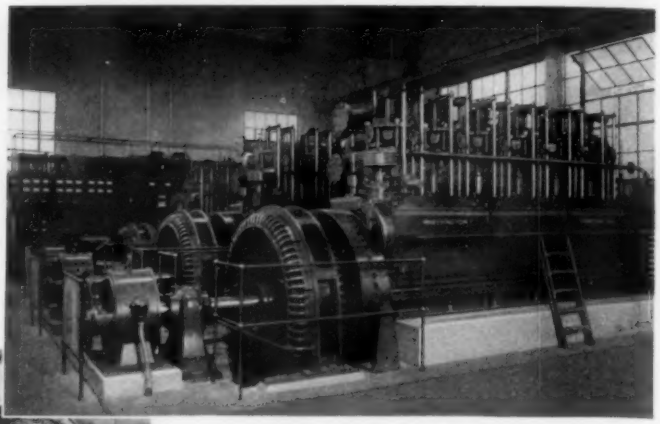
What Is Cheaper Than Dirt?

WATER, of course! Two hundred and forty-one gallons to the ton. Five cents per ton would be a little over 20 cents per 1,000 gallons. In Springfield, Ill., the minimum rate is 17.5 cents per 750 gallons. This is a lot cheaper than one can get a ton of dirt delivered. How much did you pay for that ton of coal, shoveled into the furnace, ashes removed, carried out and dumped? Is not a water supply a pretty cheap service—just having to turn a tap and no handling? asks "Over the Spillway," issued by the Division of Sanitary Engineering, Illinois State Department of Health.

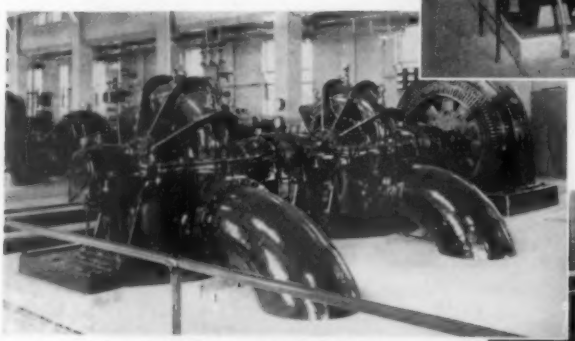
Place the cold facts before the people when they complain of the high cost of water. They'll appreciate what they are getting when it is compared with something they know.

A DELIGHTFUL WATER GARDEN CREATED BY WATER-WORKS EMPLOYEES AT ST. THOMAS, ONTARIO
Originally a willow swamp, this area was converted in three years into an attractive park with four rustic bridges and one stone bridge. Water-works employees from the pumping station and filtration plant, with the aid of one who worked out his water bill, did all the work. The engineers of the pumping station form a small community at the edge of this park, and have developed prize-winning private gardens specializing in dahlias, which add greatly to the beauty of the grounds surrounding the water works

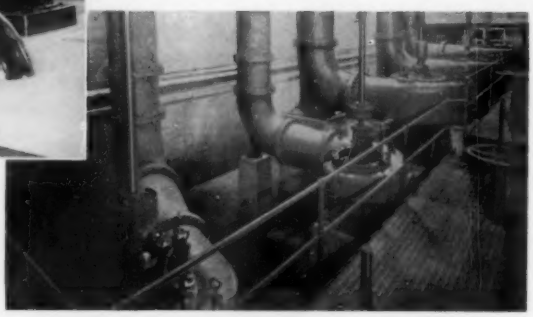
COMPLETE WORTHINGTON SERVICE *for* FORWARD-LOOKING MUNICIPALITIES



POWER AND LIGHT



WATER SUPPLY



SEWAGE DISPOSAL

SERVICE MAINTENANCE

METERING WATER SUPPLY

A COMPLETE line of water meters of every type is manufactured by Worthington-Gamon Meter Company, a subsidiary of Worthington Pump and Machinery Corporation.

IN hundreds of municipalities, a fast-growing list of Worthington installations is justifying, by splendid operating records, the confidence of those responsible for their selection. Maintained operating efficiencies and continuous dependable performance of all types of Worthington equipment have brought substantial profit to progressive communities everywhere. This is but the logical result of the unsurpassed engineering skill built into every Worthington unit . . . made effective by a rigid policy to produce the best.

Be sure to attend the AMERICAN WATER WORKS ASSOCIATION CONVENTION, Buffalo, New York, June 7-11, 1937

WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: **HARRISON, NEW JERSEY** • *Branch Offices and Representatives in Principal Cities throughout the World*

WORTHINGTON

ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

IC7-14

Sewers and Sewage Treatment

Chicago Saves the Day—Files Compliance Report

ON January 2, 1937, the Sanitary District of Chicago, Ill., filed a report with the Supreme Court of the United States showing its compliance with the Court's order ending litigation which involved thirteen states. With PWA funds the District is rushing work on its vast system of intercepting sewers and sewage-treatment plants in order that the District may meet the deadline set by the Court, December 31, 1938, when diversion of Lake Michigan waters for sewage dilution must be reduced to 1,500 cubic feet per second.

Back of this construction is a suit brought by the states of Minnesota, Pennsylvania, Ohio, Michigan, New York and Wisconsin, charging that the Sanitary District and the state of Illinois were reducing Great Lakes levels and threatening damage to lake harbors by too much diversion. Siding with Illinois in the court battle were the Mississippi Valley states, Missouri, Kentucky, Tennessee, Louisiana, Mississippi and Arkansas, which feared a reduction might imperil navigation along their shores.

The Court's ruling against Illinois not only ended the long and costly litigation, but set in motion the vast construction program necessary if diversion is to be cut down. The improvements scheduled will cost approximately $200,000,000, bringing the total cost of the works of the Sanitary District to $328,000,000.

The implications of the Supreme Court order, made nearly seven years ago, were obvious. If diversion of lake water was to be decreased, then proper dilution of sewage would be impossible. If continued protection to health were to be given, then Chicago would have to adopt some other method of treating its sewage. Huge new treatment works have been built as a result of this order, and a vast new system of intercepting sewers has been tunneled beneath the streets of Chicago.

The District's report filed on January 2 with the Supreme Court showed that construction costing $135,284,080 had been completed up to December 1, 1936. This includes work done before the program was halted during the District's financial dilemma, as well as construction carried on with PWA aid. There is still $64,158,000 worth of work to be done before the entire program will be completed.

Some idea of the immensity of the program toward "complete" treatment of sewage is indicated by the comparative statistics below. The total population served by the Sanitary District is 4,495,000, and industrial wastes handled have a population equivalent to 1,770,000. Thus the treatment works being erected will handle sewage from a city having an equivalent population of 6,265,000 persons, and are designed to meet future population increases.

Engineers assume that 85 per cent purification of sewage constitutes "complete" treatment. The West Side plant, the world's largest installation of Imhoff tanks, which is nearing completion, has a capacity of 477 million gallons of sewage daily, but gives only 33 per cent treatment. When the adjoining Southwest plant, the world's largest activated sludge plant, is completed, effluent from the West Side plant will be pumped to it for additional treatment, resulting in a 70 per cent purification.

The $30,000,000 Southwest works will give 85 per cent treatment to 400 million gallons of sewage daily, and can carry a peak load of 600 million gallons. In this plant of 38 acres of aeration and final settling tanks, there is enough concrete to pave 79 miles of two-lane standard highway. Tank walls alone constitute 11 miles of reinforced concrete. The plant is being erected at the record-breaking low unit cost of $32,000 per million-gallon capacity. This compares with a unit cost of $58,000 in the construction of the District North Side plant, completed some years ago and now being enlarged with PWA aid.

The last of the major plants of the Sanitary District, the Calumet works, was completed last year. The Imhoff installation was completed in 1922; PWA funds completed the activated sludge installation.

Poplar Roots Are Still Unpopular

THE village of Oak Park, Ill., reports a constantly increasing number of complaints due to the stoppage of house drains and catch-basin connections by the roots of poplar trees. During 1935, according to the Annual Report, there were approximately 143 cases where the Street Department had to dig up the parkway and street to rod out and clean out sewer connections. In about 50 per cent of these locations, the trouble was due to the drain's being filled up with tree roots, principally poplar tree roots.

Sewage Plant Made Beauty-Spot

THE aversion of a community to a sewage-treatment plant in its neighborhood is an objection to offset rather than to ignore. Especially is this true when the plant is located in a heavily populated district and directly on an arterial boulevard at the entrance to a municipal park. Faced with pleasant surroundings, the objectionable features of a sewage-treatment plant may be reduced to a minimum. "If the eyes are satisfied, disagreeable odors are much less offensive, reports John J. Wirts, Superintendent of the Westerly Sewage-Treatment plant, Cleveland, Ohio. The best indication of the accuracy of this statement is the continuous flow of visitors now to be seen over the walkways of the plant grounds, plus a large amount of favorable comment from the public.

An abundance of flowers and shrubs were carefully planted in an informal garden, centering about a water fountain which lends action to the beauty of the entire scheme. A sun dial, a bird bath and carved stone benches were also provided to complete a daytime effect, which received first prize in a city-wide garden contest.

Unusual lighting effects for night-time have been secured through the cooperation of lighting engineers of the Westinghouse Electric and Manufacturing Co. A group of high-intensity mercury floodlights to illuminate the shrubbery were installed to bring out the true green color even more effectively than under sunlight. Under water and overflow floodlights were provided in a special Westinghouse fountain to give a cycle of color and water display 21 minutes in length. During this time 126 different combinations of color and water displays occur to make an apparently endless panorama of gracefully changing designs tinted with colored light. Expert lansdscaping has been provided and includes many varieties of evergreen trees and garden plots.

DAYTIME VIEW OF THE LANDSCAPING AND FOUNTAIN AT THE WESTERLY SEWAGE TREATMENT PLANT, CLEVELAND, OHIO

In any kind of weather

A *Barco* HAMMER WILL DIG—DRILL—TAMP DRIVE OR BREAK at a low hourly operating cost.

Here's what one water superintendent of a large municipality states, "We have had our Barco Hammer about a year at this time and want you to know that we have been very much pleased with its operation; if we could not purchase another one, we would not sell it at any price."

BARCO MANUFACTURING COMPANY
1803 Winnemac Avenue, Chicago, Illinois

BARCO *Portable* GASOLINE HAMMER

Wastes Collections and Street Cleaning

Cleanly Ash and Garbage Collection in Binghamton

THAT is what the city of Binghamton claims in Vol. 1, No. 4, of a bulletin issued twice monthly by the City Administration. This condition is accounted for by regular twice-a-week collections, winter and summer, so that there is no need for ashes and garbage to accumulate in cellar or yard. To comply with the city ordinance for their removal, all that is necessary is for the householder to secure approved cans.

What does it cost? It costs 62 cents a year on a $1,000 assessment, or 1.8 cents of each tax dollar, and it averages 82 cents per capita per year. For this the householder gets 104 collections at his house per year at less than the cost of a newspaper for each call. The cans are rolled from the rear of the house to the curb by the city employees, 52 times a year. The bulletin points out that the benefit does not end there. The waste taken from the homes is used to fill swamp land within the city limits. In 1935 alone seven acres of waste swamp land were filled, part to be used for playgrounds.

The citizen is then instructed by quotations from the ordinance governing the collections of household refuse:

Garbage shall mean kitchen or table waste, vegetables, meat, fish, bones. All garbage must be thoroughly drained of its moisture and wrapped in paper before being deposited in the receptacle. Garbage receptacles must be made of metal, watertight, and provided with a tight-fitting cover and having a capacity of from 3 to 10½ gallons.

Ashes shall mean dry ashes, sawdust, floor sweepings, broken glass, crockery, oyster shells and tin cans, but not such material as may result from building operations. Ash receptacles must be made of metal, provided with a cover and having a capacity of from 10 to 28 gallons.

Rubbish shall mean refuse incident to the ordinary conduct of households, including floral decorations, Christmas greens, bottles, paper, pasteboard, rags, leather, straw or excelsior, but shall not include cut grass, loam and wall paper or material from building operations. Rubbish shall be placed in suitable receptacles approved by the Superintendent of Garbage, or shall be securely sacked or tied in bundles so as to be easily handled by one man.

Neither garbage, ashes or rubbish shall be placed in receptacles that are in a filthy, leaky or defective condition.

Garbage Collection Costs in Pasadena

THE Engineering and Street Department of Pasadena, Calif., is responsible for garbage collection. All garbage is delivered to a central point where it is loaded into trucks and trailers and hauled from the city under contract. The net cost of garbage collection amounted to $2.75 per ton, or 48.9 cents per capita, for the fiscal year ended June 30, 1936. The net cost per ton for collection of tin cans, bottles and metal rubbish amounted to $2.65, or 8.8 cents per capita.

Pasadena is very particular regarding the appearance of its streets, and no garbage cans are allowed to be placed in the parking for the collectors. The garbage collectors go to the rear of the houses or side yards, where garbage cans are permanently located, thus eliminating the unsightliness that results from allowing cans to be set in the parking, but it necessarily increases the cost of collection slightly because the speed of collection is somewhat reduced.

APPROPRIATIONS FOR STREET CLEANING IN NEW YORK STATE CITIES—1936

DATA GATHERED BY THE NEW YORK STATE BUREAU OF MUNICIPAL INFORMATION

NAME OF CITY	TOTAL	PER CAPITA
Auburn	$36,500	1.00
Batavia	6,325	.36
Beacon	2,525	.21
Binghamton	35,968	.47
Buffalo	255,765	.45
Cohoes	11,823.92	.51
Corning	4,650	.30
Cortland	7,500	.50
Dunkirk	6,500	.37
Elmira	25,885	.54
Glens Falls	4,500	.24
Hornell	3,800	.23
Hudson	3,675	.30
Ithaca	7,500	.36
Jamestown	10,550	.23
Johnstown	2,500	.23
Kingston	25,100	.89
Lackawanna	10,000	.42
Lockport	11,200	.48
Mechanicville	3,530	.44
Middletown	5,365	.25
Newburgh	10,100	.32
New Rochelle	58,648.06	1.09
Niagara Falls	38,845	.51
North Tonawanda	1,700	.09
Norwich	3,800	.45
Olean	4,600	.21
Oneida	21,000	1.19
Oneonta	1,650	.13
Oswego	4,646	.21
Plattsburgh	1,700	.13
Port Jervis	2,000	.20
Poughkeepsie	15,852	.39
Rochester	135,000	.41
Rome	19,500	.60
Salamanca	2,160	.22
Schenectady	78,015	.82
Syracuse	136,978	.65
Tonawanda	4,750	.37
Troy	85,522	1.17
Utica	136,939.74	1.34
Watertown	12,500	.39
Watervliet	7,100	.44
White Plains	15,368	.43
Yonkers	133,490	.99

NOTE.—In addition, the following cities reported that the street cleaning appropriation was not segregated in the city budget: Albany, Amsterdam, Canandaigua, Fulton, Geneva, Glen Cove, Gloversville, Little Falls, Long Beach, Mount Vernon, Ogdensburg, Rensselaer, Saratoga Springs and Sherrill.

Graders Stack Leaves in Gutters

YEAR-ROUND usefulness has been given to specialized street equipment by the city of Minneapolis, Minn., which adapted some of its graders to the clearing of dead leaves from gutters last fall. These graders originally were used solely to grade macadamized roads and streets during the spring and summer. Later they were put into use during the winter to clear curb-side snow after larger equipment had broken through the drifts.

Use of these graders to keep gutters free of fallen, dry leaves and insure proper drainage now extends their operating season over almost twelve complete months.

GRADER PILES LEAVES IN MINNEAPOLIS

In clearing leaves so that gutters may drain properly, the blades are used in the same manner as for snow removal. After running along the curb for some distance, the blade is raised and leaves are left in a pile to be picked up by a truck crew, which usually is only a short distance behind. Before the graders were used, stacking of the leaves and loading on the trucks were both done by shovel crews.

Each grader has a two-man crew—the driver, and the one who walks rapidly along beside the grader to keep the leaves from being thrown too far up on the curb or sidewalk. The blade is cleared of its stack of leaves from three to five times in a block, depending on the length of the block and upon the density of fallen leaves at any time in the season.

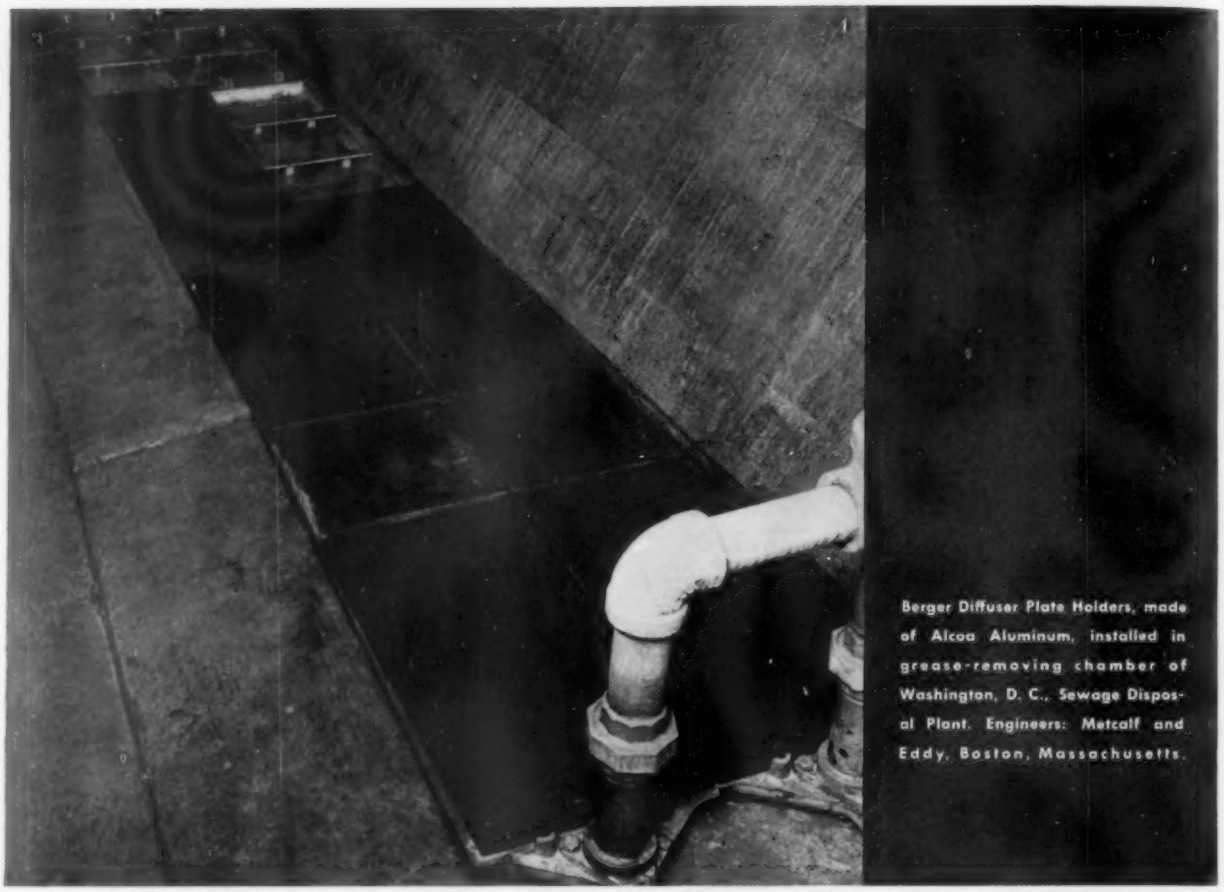
The loading crews with the pick-up trucks, however, are smaller by several men than formerly. But perhaps more important than this is that the work of clearing gutters is speeded up considerably and the equipment is operated more efficiently at a higher speed. This is especially true for the pick-up trucks, which make fewer stops in each block and travel more quickly between stops at succeeding piles of leaves.

ANGELO PENART.

TO THE TAXPAYER:

Next time you growl about the condition of your city's icy streets and mutter harsh words about the efficiency of its snow fighters, be fair, and remember this startling fact: A 5-inch snowfall deposits upon the streets and sidewalks of a city 1½ times as many cubic yards of material as a city produces in waste and ashes during an entire year.

—Today.



Berger Diffuser Plate Holders, made of Alcoa Aluminum, installed in grease-removing chamber of Washington, D. C., Sewage Disposal Plant. Engineers: Metcalf and Eddy, Boston, Massachusetts.

MAKING DIFFUSER PLATE MAINTENANCE *Easy*

Removal and resetting of diffuser plates, rapidly and without breakage, is easy when Berger Holders, made of Alcoa Aluminum, are used. Alcoa Aluminum resists the corrosive attack encountered under operating conditions, and grouting of plates is eliminated by special rubber gaskets developed by our engineers for long life with Aluminum holders.

Use of Alcoa Aluminum for Berger Holders illustrates how but one problem of maintenance can be engineered out of sewage disposal plant operation. Ask us for full details about the many applications. ALUMINUM COMPANY OF AMERICA, 2172 Gulf Building, Pittsburgh, Pennsylvania.

TO GET MAXIMUM ECONOMY

To be sure that Alcoa Aluminum will provide the desired resistance to corrosion, it is well to ask our experts for specific recommendations on every installation. Various alloys differ in cost, workability, and degree of immunity to particular sources of corrosion. Proper specifications by our chemists and metallurgists will help you get dependable results at minimum cost.

ALCOA · ALUMINUM

Airport Construction and Administration

DYNAMITE PLUS THIS INTERNATIONAL TA-40 TRACTRACTOR EQUIPPED WITH A SINGLE-DRUM WINCH LOOSENED AND PULLED OUT GREAT PILES OF STUMPS IN CLEARING THE NEW AIRPORT FOR EVERETT, WASH.

An area of 640 acres, with an average of 50 stumps to the acre, has been cleared for the Snohomish County airport, several miles south of Everett, by WPA

Municipal Airports and Federal Responsibility

AMERICAN cities have invested large sums to provide airport facilities for both public and private plane users during the past few years, but benefits other than self-advertising and good-will have flowed to state and Federal as well as city governments. The time has come when definite and complete Federal action is needed for a national system of civil airways and airports, in order that the cities may know where they stand for the future.

This is the gist of a report made public on January 13 by the American Municipal Association. The report includes a resolution adopted at a recent meeting of the Association's executive committee in Washington, D. C., which calls attention to the problem and recommends a complete projected national system of civil airways, including the establishment of financial responsibilities of the various agencies benefiting by such airports.

There are three functions of an airport serving as a part of an established airway system, the report finds: first, local use; second, service in interstate commerce to a population in an area ranging from 50 to 400 miles in radius; third, use for national defense purposes. Rapid growth of air transportation is fast leaving most municipal terminal facilities in an obsolete condition, it is pointed out, and to keep step with the development in air transport equipment, immediate further planning and development of municipal air terminal facilities becomes necessary.

Federal agencies, in the opinion of the committee, should consider Federal responsibility for any projected civil airways program on a basis similar to the Federal responsibility in the national highway system and rivers and harbors. Such consideration, however, would be for airports in accordance with their Federal value—as stops on the national airways or for national defense—after proper coordination through state aeronautical officials in compliance with Federal requirements governing design and construction features, maintenance and operation of the civil airways terminals.

Substantiating the statement that the demand upon airports has increased greatly in the past year or so, the report cites the fact that passenger traffic has increased approximately 23 per cent, and express traffic about 100 per cent.

Airports and Landing Fields in the United States

THERE were 2,342 airports and landing fields in the United States on January 1, 1937, according to the Bureau of Air Commerce, Department of Commerce. Of these, 705 were partially or fully lighted for night use. The total included 738 municipal and 451 commercial airports, 296 Department of Commerce intermediate landing fields, 622 auxiliary fields, 26 Navy air stations, 61 Army airdromes and 148 miscellaneous Government, private and state airports and landing fields. On January 1, 1936, there were 2,369 airports and landing fields.

Six states had 100 or more airports and landing fields each on January 1, 1937: California, 181; Texas, 134; Michigan, 123; Florida, 116; Pennsylvania, 111; and Ohio, 106.

The report by states follows:

STATUS OF AIRPORTS AND LANDING FIELDS BY STATES, JANUARY 1, 1937

	Municipal	Commercial	Intermediate	Auxiliary	Navy	Army	Miscellaneous Government, Private and State	Totals	Part or Fully Lighted
Alabama	7	2	7	15	0	3	1	35	12
Alaska	1	2	0	80	0	0	0	83	2
Arizona	10	4	9	21	0	1	0	45	16
Arkansas	15	2	5	8	0	0	0	30	7
California	45	44	20	50	4	4	14	181	63
Colorado	13	3	3	15	0	1	0	35	7
Connecticut	6	9	1	3	0	0	3	22	7
Delaware	1	2	0	2	0	1	0	6	1
Dist. of Col	0	1	0	0	1	1	0	3	3
Florida	43	14	4	44	5	1	5	116	26
Georgia	20	2	12	17	0	1	0	52	19
Idaho	19	0	10	11	0	0	10	50	15
Illinois	13	31	6	0	1	2	3	56	29
Indiana	10	15	8	7	0	2	4	46	19
Iowa	16	6	3	7	0	0	2	34	12
Kansas	22	6	5	8	0	2	0	43	14
Kentucky	7	0	3	7	0	1	0	18	4
Louisiana	11	3	3	10	0	1	2	30	11
Maine	5	6	0	15	0	0	1	27	3
Maryland	2	8	1	1	1	3	3	19	7
Massachusetts	6	26	1	5	1	0	1	40	7
Michigan	55	13	0	16	1	3	35	123	22
Minnesota	10	4	3	15	0	1	0	33	7
Mississippi	13	0	6	12	1	0	0	32	12
Missouri	11	6	13	4	0	0	4	38	18
Montana	24	0	15	28	0	0	10	77	18
Nebraska	16	3	5	5	0	2	1	32	15
Nevada	3	3	9	6	1	0	0	22	12
New Hampshire	6	4	0	8	0	0	0	18	0
New Jersey	4	16	0	2	2	2	2	28	8
New Mexico	6	5	10	12	0	0	2	35	17
New York	28	38	5	15	0	4	6	96	28
North Carolina	13	4	3	5	0	1	0	26	8
North Dakota	19	3	5	16	0	0	1	44	8
Ohio	34	32	9	16	0	4	11	106	22
Oklahoma	20	6	7	8	0	1	0	42	21
Oregon	15	3	10	11	0	0	2	41	19
Pennsylvania	14	63	11	10	1	1	11	111	39
Rhode Island	0	4	0	1	1	0	1	7	1
South Carolina	10	2	4	6	3	0	2	27	7
South Dakota	15	4	0	6	0	0	0	25	1
Tennessee	10	2	8	6	0	0	0	26	12
Texas	56	10	25	29	0	13	1	134	50
Utah	5	1	16	2	0	0	0	24	18
Vermont	6	3	0	1	0	1	0	11	1
Virginia	9	8	8	15	2	1	2	45	15
Washington	21	7	9	6	1	3	4	51	13
West Virginia	8	4	0	12	0	0	1	25	2
Wisconsin	21	17	4	8	0	0	3	53	18
Wyoming	14	0	10	15	0	0	0	39	13
Totals	738	451	296	622	26	61	148	2,342	705

7 CENTS AN HOUR!

TO SPREAD GRAVEL BASE!

WORKING on Seattle's new $1,500,000 water-front boulevard, this "Caterpillar" Diesel Auto Patrol is spreading a gravel base for the cement roadway—consuming less than 7 cents' worth of Diesel fuel per hour.

Towns and cities find plenty of ways to keep their Diesel Auto Patrols busy—and they slash old established costs on every job. In winter, these versatile machines plow snow and scarify ice on the streets. In the open seasons, they speed the jobs of scarifying and blading the worn surfaces.

A "Caterpillar" dealer can give you the important facts and figures on "Caterpillar" Diesel Auto Patrols as applied to your street and road problems. Get in touch with him.

FEWER TRIPS FOR A FINISHED JOB

Maintaining city streets, this "Caterpillar" Diesel Auto Patrol is shown scarifying and blading at the gutter line in Carlsbad, N.M. This operation demands plenty of power and traction, which are amply supplied by the "Caterpillar" Diesel Auto Patrol.

CATERPILLAR TRACTOR CO.

REG. U.S. PAT. OFF.

PEORIA, ILL.

WORLD'S LARGEST MANUFACTURER OF DIESEL ENGINES, TRACK-TYPE TRACTORS AND ROAD MACHINERY

Public Safety

Flood Conditions Test Radio

A Telegram

EVANSVILLE, IND. — When the first Western Electric ultra-high frequency two-way police communication system was installed in Evansville, in January, 1935, it was looked upon by some as a thing for experimentation. Not by the greatest stretch of imagination was it pictured as ever to serve in such a catastrophe as that which presented itself in the recent Ohio Valley flood.

During the past two years in regular police work this two-way system had proved its effectiveness, and it was decided that the fire department should be equipped with radio during 1937. Consequently a Western Electric 5-watt mobile transmitter was installed in Fire Chief Alex Hougland's car about two weeks prior to the flood. After the emergency ended, the writer was anxious to hear what Chief Hougland thought of his added equipment. I asked the chief to give me his candid opinion of its usefulness, and his answer was: "I dread to think what might have happened without this rapid two-way communication."

I asked him for some actual experiences and his reply was as follows: "There were many instances in which this system proved its worth. However, there was one real emergency which was conquered as a result of rapid communication. A call was broadcast for W9XQT, which is my car. I answered and was told to meet City Engineer Louis Geupel at the Bell Telephone Building immediately to fight an onrush of water into the plant. I rushed to the building, calling for needed assistance en route, and on arriving found four breaks in the basement wall spouting large streams of water which in a very short time would have flooded equipment rendering the telephone system inoperative. With help that arrived I had pumps in operation before Mr. Geupel could arrive from the City Building. Within a very short time a serious situation was under control."

Many other accomplishments were reported by the police and traffic departments, proving the superiority of two-way communication for local emergencies whether combating the criminal or the elements. An estimated 40 per cent of the city was partially or wholly inundated and not a single life was lost by drowning. A check-up at the city health office revealed the city death rate for the emergency period to be less than the same period last year. Certainly police radio played a part in establishing such a record. By directing the rescue of unfortunate persons, radio equipment was put to the severest test. Much of the mobile equipment became damp and some was inundated when cars were driven into deep water. Such equipment was immediately baked out and and thus placed back in service. Two-way police communication is undoubtedly a great protective agency.

ROY E. McCONNELL,
Chief Radio Engineer, Evansville Police Radio.

New York Starts 3-Platoon System

NEW YORK CITY'S 3-platoon system for the fire department, voted favorably at the last (November) election, went into operation March 1 in the first of the department's 381 companies, and is expected to be in full operation by the end of 1938. The system starts in Engine Companies 1 of the First Division, 4 of the Third, 153 of the Eighth Division. The new tours of duty will begin at 8 A.M., 4 P.M., and midnight daily, compared with previous tours from 9 A.M. to 6 P.M. and 6 P.M. to 9 A.M.

Three hundred men will be appointed every two months, and the training period will be two months instead of three months, to speed completion of the 3-platoon system when the present force of 6,000 men will have increased to 11,000.

The average company with 16 men will get an additional 10 men, though the effective strength will remain as now with 8 men on duty during each tour.

The firemen, like the policemen, will work six 8-hour tours with 32 hours leave at the end of each six-day cycle. In New York, this is called the group system for the firemen and the squad system for the police.

Kreml Wins $5,000

Police Lieutenant F. M. Kreml of Evanston, Ill., whose accident-prevention bureau cut traffic fatalities from 21.8 to 2.9 per 100,000 population, received the $5,000 grand award of the Commercial Investment Trust Safety Foundation on March 3.

Evanston Has Radio Ambulance

EVANSTON'S two-way-radio ambulance in first-aid drill is shown at right. It is one of eleven Chevrolets shown above, all equipped with General Electric 15-watt ultra short wave transmitters as well as receivers. The ambulance is at extreme left; the second from right is an accident-prevention car. The group at extreme right comprise Mayor C. H. Bartlett; Lieut. A. O. Wharton, in command of traffic division; and Lieut. C. Ekman, chief of detective. Ambulance equipment includes one Arntzen auxiliary stretcher and one collapsible stretcher.

Dangerous Waters!

WHEN floods bring the threat of polluted water supplies and of water-borne disease, HTH proves itself an invaluable ally to water works and health officials. With HTH, emergency hypochlorination can be applied quickly, on the spot, wherever pollution is found. A highly concentrated chlorine carrier, containing 70% of available chlorine, quickly soluble in water, HTH can be transported to the job and put to work before a dangerous situation has time to develop.

Then there is the aftermath of flood conditions, as receding waters leave a seemingly hopeless task of cleaning up and disinfecting flooded areas and buildings of every kind. Here again health authorities find HTH of invaluable assistance in restoring sanitary conditions in scores of places where a less concentrated, less mobile or less soluble source of chlorine cannot serve as effectively.

Fortunately, floods do not strike frequently at the average community nor do they strike so quickly as to find local officials wholly unprepared. But there are day-to-day emergencies, too, which require prompt and effective chlorination—broken water mains, an abnormal water load due to a serious fire, polluted wells, failure of a chlorinator, an interruption in the power supply—just the sort of jobs for which HTH is made to order.

No wonder that so many experienced water works men keep an ample supply of HTH always on hand, not only as an important measure of preparedness for every sort of emergency, but also because they find it so useful in scores of every-day sanitation jobs! Write or wire us for full information and nearest available stock.

The MATHIESON ALKALI WORKS (Inc.) 60 East 42nd St., New York, N. Y.

Liquid Chlorine . . . HTH and HTH-15 . . . Soda Ash . . . Caustic Soda . . . Bleaching Powder . . . Bicarbonate of Soda
Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide

BE PREPARED WITH HTH FOR ANY EMERGENCY!

When you write for that catalog, kindly mention THE AMERICAN CITY.

Health and Sanitation

Dust Storms and Their Possible Effect on Health

WITH the possibility that drought conditions may continue in many sections of the United States and thus again create conditions favorable to dust storms during the coming year, it is well to recall the conclusions arrived at by Earle G. Brown and others in Public Health Reports on the possible effects of dust storms on health. These are:

1. The dust storms which have occurred in the Central West are the climax of a four-year period of decreased rainfall, a lack of growth of vegetation, and high winds.

2. Crop and livestock losses have been large. It is believed by authorities that, although there has been much shifting of soil, the actual damage to farm lands is small, if any.

3. There is no evidence that pathogenic organisms were actually carried by the dust.

4. The dust acted as an irritant to the mucous membranes of the respiratory tract. Laboratory examinations have shown the dust to have a high silica content.

5. The effect of dust storms on the public health must be divided into "immediate" and "future" effects.

6. The immediate effects are shown in the increase in morbidity and mortality from the acute infections of the respiratory tract.

7. The future effect is unknown. Possibly over a longer period of exposure or repetitions of the storms the end effects would be similar to those from exposure to mine and other industrial dusts.

8. Dustproofing of homes and the wearing of masks are essential to the comfort and welfare of individuals living in the dust area when future storms occur.

Model Ordinance Requires Sterile Dishes at Cafes

THE bacteria-laden dish may be a major link in the spread of many diseases. The excessively high bacteria counts common in the dish-water used by many restaurants, hotels, soda fountains, hot-dog stands, etc., has led to the preparation of a model ordinance incorporating present-day standards for the washing and sterilization of eating utensils either by hot water or by chlorine disinfectants. Copies of this model ordinance are being sent to health officers of cities throughout the United States by the American Institute of Sanitation.

In the letter of transmittal, the Institute has called attention to the fact that one-third of all deaths in the United States are caused by infections which may be borne by saliva. This is a very definite reason why all eating utensils in public establishments should be sterilized before use by another person. The remarkable reduction in deaths from typhoid fever following the general adoption of the disinfection of public water supplies with chlorine has saved 50,000 lives annually.

Dr. James G. Cumming, of the Department of Health of the District of Columbia, believes that bacteria-laden eating utensils may be a major link in the spread of many diseases, especially pneumonia, influenza and other respiratory ills. Effective dish-washing and sterilization can be both inexpensive and practicable in public eating establishments.

Present methods of washing dishes in many public places serving food are far below the standards that should prevail. Investigators have found as many as 50,000 bacteria on a so-called clean dish. As high as 25,000 bacteria on a spoon is not rare. Several million bacteria in a single drop of dish-water is not uncommon.

The suggested model ordinance reprinted below should be given serious attention. It was prepared by a committee of bacteriologists associated with manufacturers of disinfectants and sanitary products. While it is merely suggestive, it does embrace the essential points in the correct sterilization of utensils either by hot water or by chlorine disinfectants, and embraces the standards of those health departments now requiring the sterilization of eating utensils.

AN ORDINANCE

To Regulate the Washing and Disinfection of Eating and Drinking Utensils

All utensils used in serving food or drink in public places must be cleaned and disinfected by one of the following methods:

Utensils Used for Serving Water, Soft Drinks and Beer at Roadside Stands, Taverns and Saloons

1. Rinse utensils in fresh water to remove all traces of beverages.

2. Immerse utensils in a chlorine solution for 2 minutes and then invert on a drain board. The chlorine solution shall contain, when freshly prepared, 200 parts of available chlorine per million parts of water (ppm) and shall not be used after its strength has been reduced to 50 ppm. The chlorine solution or powder used for preparing the disinfecting solution must meet the approval of the health department.

3 The utensils after immersing in the chlorine solution may be rinsed in running tap water.

Restaurant Eating and Drinking Utensils

Hand Washing

1. Wash thoroughly all dishes and glasses after each usage, in warm water containing soap or an alkali cleanser.

2. Disinfect all dishes and glasses by means of hot water or a chlorine solution.

A. Where hot water is used, the temperature of the water shall be at least 170 degrees F., and the period of immersion shall be at least 2 minutes.

B. Where chlorine solution is used, the solution shall contain, when freshly prepared, 200 ppm, and shall not be used after its strength has been reduced to 50 ppm. The period of immersion in the chlorine solution shall be at least 2 minutes.

3. Remove dishes and glasses and place on drain-board to drain and dry.

Where chlorine disinfection is used, three compartment vats must be used, the first compartment for washing, the second for rinsing, and the third for chlorine immersion.

Mechanical Washing

Utensils washed by mechanical machines shall have all surfaces subjected, either in washing or rinsing, to a temperature of not less than 170 degrees F. for 2 minutes. Such dish-washing machines must have a direct connection with the hot-water supply.

Drying

Dishes, glasses and other eating utensils shall be drained until dry. Hand drying is not recommended.

Exceptions

These regulations do not apply to dishes, cups, and other utensils made of paper, wood or similar materials which are used but once and discarded.

Education, the Basis of All Health Programs

THE health director must have the ability to study and see clearly his own program in relation to local problems and needs, to the end that his program will develop the most effective use of personnel and funds at his command. While it is true that there are certain fundamentals essential to all well-balanced public health programs, there has been too great a tendency to standardize, to routinize local health programs, especially in methods of approach in health education and in the provision of preventive medical services for individuals at various economic levels. Too many health officers adopt a certain type of program simply because someone else has that type of program. Some of the outstanding health departments of this country—Milwaukee, Baltimore, New Haven, and Syracuse—have been successful because they have not followed the other fellow's plan but rather have developed their own in the light of their own problems and possibilities. Let us not forget that local problems and local possibilities are not necessarily synonymous.

Educational groundwork must precede corrective action, especially when the pocketbook is affected. Surely, no individual desires to die prematurely, and no sane person wishes to be responsible for the death of another. Nevertheless, the health officer who boldly invades a community which has not benefited by an educational program establishing in the lay mind the relation between impure milk and the death of babies, will literally be driven from his home and family if his first official act is to require universal pasteurization of milk. The need of this safeguard is apparent to every sanitarian, but the health official must not travel too far ahead of public opinion, especially when local pride is affected. Contrariwise, the health officer who questioned the desirability of 100 per cent pasteurization in Boston or Cincinnati would be guilty of official suicide. Capable leadership on the part of the health officer involves the development of services which, with the exception of research work, will show measurable, demonstrable results within a reasonable period of time.

—From a paper on "Recent Advances in Administrative Technics," read by HENRY F. VAUGHAN, Commissioner of Health, Detroit, Mich., at a special session of the American P. H. A.

Good Engineering and Good Products Make Good Roads

Socony Asphalt, Standard Brand, New York State Reservation, Saratoga, New York.

Socony Asphalt Road Oils · Socony Asphalt Joint Fillers · Socony Waterproofing Asphalt · Socony Cut-Back Surfacing Asphalt · Socony Asphalt Binder A for surface treatment · Socony Refined Asphalt for sheet asphalt paving · Socony Cold Patch Asphalt for all types of patching · Socony Asphalt Binders B & C for penetration work (Asphalt Macadam) · Socony Paving Asphalt 51-60 and 61-70 Penetration for the mixing method (Asphaltic Concrete) · *Specifications and all other particulars furnished on request.*

STANDARD BRAND
SOCONY ASPHALTS AND ROAD OILS

SOCONY-VACUUM OIL CO.
INCORPORATED
STANDARD OIL OF NEW YORK DIVISION

SELECTED CATALOGS for YOUR CONSIDERATION

THE AMERICAN CITY should always be mentioned when writing for this material which is furnished free.

Keep your files up to date by checking over these items each month and writing for those you need.

A Study in Traffic Safety

160. "Army of Stupid Indifference" is the title of a valuable booklet published by the Bendix Products Corp., South Bend, Ind., containing correspondence between Laurence J. Lane, Chief of Police, South Bend, Ind., and Col. Fred L. Dennis, Director Highway Safety, Bendix Products Corp. The booklet will be helpful to any municipal official charged with traffic safety.

Center Stripe Reflector Buttons

161. Life Line traffic markers, which provide permanent visibility, as they appear as a row of small electric lights along the center stripe, which can be seen at a greater distance than even today's high speeds require, are described completely in the literature of the National Traffic Appliance Co., 3088 W. 106th St., Cleveland, Ohio.

Less Dead Load on Bridges

162. Aluminum Company of America, 2172 Gulf Bldg., Pittsburgh, Pa., will be glad to discuss the engineering consideration involved in the use of Alcoa aluminum to replace needlessly heavy floors and floor systems, railings and walk-ways on bridges to increase their life. Correspondence is invited.

Recreation Equipment

163. Recreation Equipment Co., 724-26 W. Eighth St., Anderson, Ind., in its new Catalog C describes its complete line of playground and swimming pool equipment, with many illustrations showing various combinations for use in gymnasia, playgrounds and swimming pools.

Special Police Motorcycles

164. A new illustrated bulletin, "Pride of the Force," announces two new police Special motorcycles made by the Indian Motocycle Co., Springfield, Mass. Speed, safety and modern streamline construction are among the outstanding features of these two new machines, which may be equipped with armored cars, police dispatch cars, or standard police sidecars, if desired. The two new machines are the Indian 4 and the Indian Chief 74.

Traffic, Caution and Street Signs

165. The Municipal Street Sign Co., Inc., 233 Meeker Ave., Brooklyn, N. Y., has issued several new bulletins on municipal traffic, caution, warning and criss-cross street signs, which it will be pleased to send to municipal officials interested in making it easier for strangers to locate streets in their cities.

An Industrial Safety Catalog

166. A new catalog, No. 5-B, devoted exclusively to the general industrial safety field has recently been released by Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh, Pa. The book is 128 pages in length, generously illustrated and fully descriptive. It represents a most comprehensive cataloging of industrial safety equipment and includes all the latest developments in safety work, some of which are of an exclusive nature.

Cities Save Money Cleaning Sewers

167. "Serving Your City" is the title of a booklet issued by Champion Corp., 4716 Sheffield Ave., Hammond, Ind., telling in figures and pictures the ways and means used by progressive cities to reduce sewer maintenance costs with champion sewer cleaning equipment.

Emergency Pipe Clamps

168. Skinner emergency pipe clamps have saved the cost of new pipe, extra labor and shut downs in many water works where breaks have occurred. They are described and illustrated in a new folder issued by the M. B. Skinner Co., South Bend, Ind. The clamps come for ½ to 12-inch pipe.

Restoring Flooded Equipment

169. General Electric Co., Schenectady, N. Y. has prepared publications describing methods of restoring flooded electric equipment to service and has sent these to all G-E district and local offices in the affected regions of the Ohio and Mississippi Valleys. They are available free of charge to any municipalities upon request addressed either to the local offices or the General Electric Co., at Schenectady, N. Y.

Watching Parking with Meters

170. Parking meters equipped with Mark-Time time-control devices of proved mechanical dependability are described in detail in literature which city officials may obtain from M. H. Rhodes, Inc., Rockefeller Center, New York. Simplicity of construction, only four moving parts, and a large, round, easy-to-read dial are features of this parking meter.

A New Street Catalog

171. Pictorial Reference Catalog No. 1655 recently issued by Austin-Western Road Machinery Co., Aurora, Ill., covers its complete line of road-making, earth-handling, rock-crushing and street-cleaning equipment in a single multi-colored catalog replete with illustrations.

Mechanical Flow Meters for Water

172. In Publication 2094 the Cochrane Corp., 17th St. and Allegheny Ave., Philadelphia, Pa., describes and illustrates in detail Cochrane high torque mechanical flow meters for measuring the flow of water through pipe lines.

Roads Built of Tar

173. A 70-page handbook containing complete tables and useful general information relative to the use of Tarmac for road construction and maintenance has just been issued for free distribution by The Tar and Chemical Division, Koppers Co., Koppers Bldg., Pittsburgh, Pa.

High-Duty Sprayers for Shade Trees

174. It takes pressure and capacity in a spray outfit to reach the tops of the tallest trees and move rapidly from tree to tree, thoroughly drenching each one. The catalog of John Bean Mfg. Co., 5 Hosmer St., Lansing, Mich., describes in detail the 20- to 50-gpm pressure sprayers made by this company.

Water-Works Practices

175. A booklet on new water-works operating practices, containing data from the *Journal* of the American Water Works Association, has been prepared by the Activated Alum Corp., 80 Broad St., New York, and copies may be secured gratis.

(*Continued on page 23*)

WHAT CATALOGS DO YOU NEED?

2-5

Either write direct to the manufacturers for their literature, of if you prefer, put a circle around the identifying numbers below to indicate the catalogs you want, mail this coupon to THE AMERICAN CITY Magazine and we will see that the catalogs are sent to you.

160 161 162 163 164 165 166 167 168 169 170
171 172 173 174 175 176 177 178 179 180
181 182 183 184 185 186 187 188 189 190 191
192 193 194 195 196 197 198 199 200 201

NAME .....

POSITION .....

ADDRESS .....

Send this coupon to THE AMERICAN CITY Magazine, 470 Fourth Avenue, New York City.

Report on Disastrous Ohio Flood

Hundreds of Turbine Pump Motors Submerged Without Damage

When the recent floods reached unprecedented heights along the lower Ohio, particularly in and near Cincinnati, countless water supplies were shut off. Hundreds of Turbine pumps powered by U. S. Uniclosed Motors were Submerged for days. Since the waters have lowered, many of these motors have been inspected, dried out and the bearings cleaned, then quickly placed again in service with no damage.

Practically the entire city of Cincinnati obtains its water supply from wells and 60% to 75% of these wells are equipped with Cook Pumps, powered with U. S. Uniclosed Motors. The suburb of Norwood obtains all its water from U. S.-motored pumps and during the entire time that certain Cincinnati pumping stations were flood-affected, Norwood supplied drinking water to the surrounding communities. Cincinnati's pumps, not in the flood area, performed to capacity during the critical water famine.

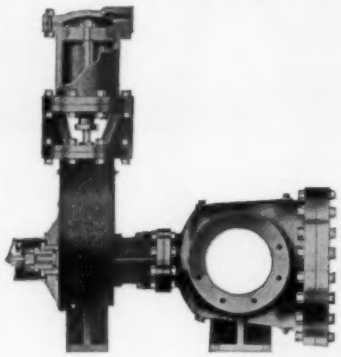
Cook Pump with U. S. Motor at Greendale, Ind., which supplied emergency water to refugees from Lawrenceburg and vicinity during flood.

Refugees from Lawrenceburg, Indiana, increased the population of adjoining Greendale by 5,000 during the flood and in the emergency a U. S.-motored pump supplied the increased demand satisfactorily.

Instance after instance could be cited of the dependability of U. S. Motors during the recent catastrophe. Because of the large number of various types of pumps operating in the flooded districts, the most crucial test of water-submergence was given to both pump and U. S. Motor. Due to the asbestos-protected motor windings and the enclosed housings of the bearings, damage was negligible. The rapidity with which the submerged pumps have been placed in service quickly in the wake of the flood is a strong testimony of the merit of the motors.

U. S. Electrical Motors, Inc., is desirous of receiving reports from all owners of U. S. Motors in the flooded areas. The Chicago address is 1500 S. Western Ave.; Brooklyn, 80-34th St.; Los Angeles, 200 E. Slauson Ave. A Bulletin describing U. S. Motors is available to those interested.

Smooth, Dependable Control

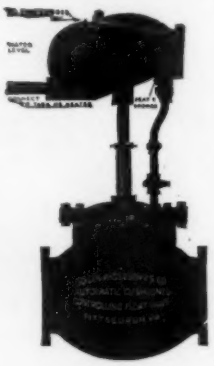


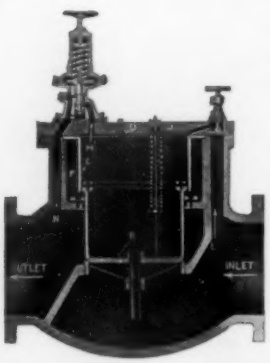
THRU-FLOW CONE VALVE

Afford full pipe line flow without friction loss. Always oil lubricated. Axially unseats before it rotates without friction, rub or wear. Especially desirable for sewage disposal service.

CONTROLLING FLOAT VALVE

Ideal for heaters, vats, tanks, etc. Valve entirely self-contained and operates without water spill. Sensitive in operation and indestructible due to air and water cushioning and heavy bronze mountings. Sizes to 24".



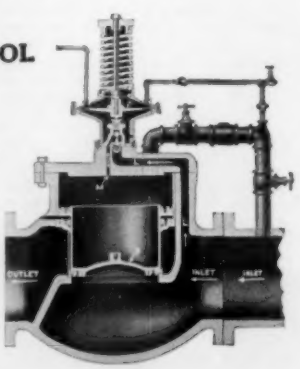


WATER REDUCING VALVE

Assures positive control of low pressure. Air and water cushioning prevents shock or hammer. Supplied with single or dual pilot controls for any service. Sizes to 24".

ALTITUDE CONTROL

Assures uniform water level in tanks, standpipes and reservoirs. Suitable for use in single or two-way line service. Heavy internal bronze mounting and air and water cushioning makes valve indestructible. Sizes to 24".



GOLDEN-ANDERSON VALVE SPEC. CO.
1329 FULTON BLDG.
PITTSBURGH PENNA.

MARCH, 1937

Vol. LII, No. 3

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Flood Control and the Cities

Land-Use Policies Which May Aid in the Development of Flooded Areas in Some Communities

By L. SEGOE
Planning Consultant, Cincinnati, Ohio

IN the heat of the current discussion of flood-control proposals involving Federal and state action, a clarification of potentialities and limitations seems desirable. The main point to remember is that even if the up-stream reservoir system of fourteen or thirty-nine reservoirs recommended by the U. S. Corps of Engineers were built, local flood protection by each city would still be necessary. The cities, therefore, cannot afford to sit back and leave the matter in the hands of an OVA (Ohio Valley Authority) or the Corps of Engineers, but will have to prepare plans for the redevelopment of their low-lying sections, construct their own flood-protection works, and, in preparation of these, adopt policies and institute measures that will facilitate the carrying out of such redevelopment.

Consideration of the problems of protection against the dangers of life and property by floods all seem to point to the desirability of getting into public ownership at the earliest possible time the areas subject to floods, whether these are to be surrendered to the river or redeveloped to make them flood-free.

The system of reservoirs on the tributaries will afford no protection against *extreme* floods. Had the fourteen reservoirs already authorized by Congress been in existence, these might have lowered the crest of the recent flood by three feet at Cincinnati and by less at Louisville. The real benefit from the system of reservoirs will be in reducing the *frequency* of floods of medium height. Because of the great frequency of such floods, flood damages over a long period of years are largely due to such floods and, consequently, the reduction of such damages by the reservoir system would be substantial—estimated at about 75 per cent at Cincinnati and about 86 per cent at Pittsburgh. But it should be again emphasized that, with all the reservoirs recommended by the Corps of Engineers in operation, we still should have had a flood of perhaps 75 feet at Cincinnati this winter. This being so, the need of local flood-protection works becomes obvious if it is desired to keep the river out of the sections at or below such flood levels.

Reclamation or Relocation?

The first and most obvious question that these facts lead to is whether the reclamation of these sections by local flood protection works is economically justified, or whether the simple and drastic answer may not be to "get out of the way of the river." After all, aside from certain public service facilities which must be fully protected in any event, in many cities most properties in the flooded areas are of relatively low value; and we certainly have ample land for the relocation of residences, business and industrial buildings from these flooded areas. The land so vacated could then be devoted to such uses as are little affected by high water. Parks, playgrounds, playfields, and areas for automobile parking immediately suggest themselves, and there are others—most of them of public nature.

On the economic side, the self-evident fact should not be lost sight of that flood waters cause damages only to the extent that value is placed in their path. Therefore, such damages can be minimized not merely by reducing the height or frequency of floods, but by *reducing the occupancy and values of areas subject to floods.* This raises the question whether reoccupancy, rehabilitation, and reconstruction of buildings in these areas—for which public and private agencies are now girding themselves—should be encouraged or rather discouraged. It is quite possible that with the additional investment of a lot of somebody's money in these areas in the next few months, a future flood like the recent one might cause even greater damages.

Similarly, there is a danger that by reason of increased occupancy and values in the areas subject to floods after the construction of the system of headwater reservoirs, the damages over a long period of years might be greater rather than less, in spite of the 300-, 400- or 500-million-dollar expenditure that these works might cost. The reduction in the frequency of floods of medium height might easily have the effect of further crowding-in on the river—if these sections are left in private hands. Apparently,

different people and enterprises are willing to put up with the inconveniences and losses caused by floods of different frequency. Some will stand being flooded out every five years but not every two years; others every ten years but not every five years—and thus occupy properties at corresponding elevations and distances from the river. As has already been pointed out, the principal effect of the reservoir project will be the reduction of the frequency of floods of medium height. Consequently, the enterprises ready to put up with floods of certain recurrence may move to lower ground closer to the river, with the result that many such enterprises as are now located on higher ground in the flood area would "march on the river," relying on the protection of the reservoir system. An increased demand may thus be created for properties in these sections, land prices would rise, considerable new construction and remodeling would occur, and then, with the coming of another extreme flood, the losses to property and life may be much greater than ever before. Only the public ownership of these areas can prevent this situation.

Steps in a Long-Term Program

With these several aspects of present conditions and future probabilities all pointing to the desirability of the public ownership of areas subject to floods, what are the means at our disposal—save the outright purchase of all the land involved—to bring gradually into public ownership these properties at fair and reasonable prices and, in the meantime, to minimize the loss of life and property by any new flood disaster?

1. The most obvious and reasonable step, it seems, would be to prevent the construction of any new residences or the reconstruction of any old ones of whose economic justification, structural safety, or suitability there is reasonable doubt.

2. Another step would be the rigorous application of standards of structural safety and sanitary acceptability to buildings other than residential.

3. Another, the acquisition or optioning by the public authorities of as many properties as they can afford, in their present damaged state, and not after they may have been rehabilitated.

4. And to facilitate the long-term program of acquiring these flooded areas, consideration should be given to the establishment of a special flood-emergency assessment district and the levying of a special tax on the properties in such areas.

This special tax would be an annual assessment to cover the public cost of equipment and reserve organization—the stand-by charges—for flood emergencies and of the special services by public agencies during and after floods for these properties and their occupants. It would constitute a sort of compulsory flood insurance to relieve the rest of the community of the cost of bailing out, as it were, these enterprises and people who insist on staying in these flooded areas. There is no reason why the taxpayers of the entire community should underwrite the risk which these people or property owners continue to take and should subsidize to that extent these areas. For it seems evident that the lower property values and rentals in these districts are sustained by such subsidies and that the differentials between these and those on higher grounds would disappear or would be greatly reduced if the property owners and enterprises had to defray such costs as are involved in the special public services rendered at times of flood, or were required to carry compulsory insurance against such costs. (The special assessment here suggested would be similar to the assessments of a conservancy district—with the distinction, however, that while in the latter case the assessment is for flood protection, in this case it would be for emergency services during and after floods.)

Obviously, the effect of such a special assessment would be to decrease the demand for properties in sections subject to them, to cause the relocation of enterprises to flood-free land, to lower property prices and therefore make it less expensive for the public to acquire these areas. At the same time, there is nothing unfair in the suggested scheme. On the contrary, it would terminate an unfairness to the taxpayers throughout the community who now pay a subsidy to the property owners in flooded areas. The new and lower property prices which the proposed assessment would bring about would, in fact, be the true values of these properties without this special public subsidy.

Keeping the Floods from the Cities and the Cities from the Floods

To the Editor of THE AMERICAN CITY:

The flood situation in the Ohio Valley appears to me to offer an excellent opportunity to put into immediate practice some of the principles outlined in Mr. Frederic A. Delano's excellent statement on Federal Housing Policy as published in your January number. The Administration is already being deluged with all sorts of proposals for controlling and preventing floods. Would it not be quite fitting and constructive to recommend that some money be diverted from the somewhat negative program of flood control, and spent instead for the removal from the flood path of those human activities to which floods are a particular hazard?

It has always seemed something of a truism to me that there were two quite different ways of dealing with flood damage to cities; one being being to keep the floods out of the cities, and the other to keep the cities out of the way of the floods. The past history of practically every river-front city has given evidence of a blithe disregard of flood danger by those responsible for the city's growth. We therefore are faced repeatedly with a situation where large residential areas, often those of the lower income groups, are flooded periodically, even by floods of much less magnitude than the present one.

Relating this situation to Mr. Delano's housing program, I would propose that the Federal Government, either directly or through grants-in-aid to cities, inaugurate a policy of purchasing low-lying residential areas, and of resettling the population in suburbs or satellite communities on higher ground. Such action in such cities as Louisville, Evansville or Paducah would seem on a par with the purchase of submarginal agricultural lands or lands in the drought area, and the resettlement of their occupants. It would seem much more constructive to demolish lowland slums and to provide new housing developments on higher ground, than to build walls or

levees whose net effect is to permit the slums to continue.

Furthermore, in the light of the current catastrophe, it would seem proper for the Federal Government to institute such measures in one or two communities as demonstrations, without waiting for elaborate local machinery to be set up to take care of them. On the other hand, the city of Louisville may already be in a positon and willing to undertake such a project cooperatively. I have no personal knowledge of the situation there but understand that there is good residential land available, out of flood danger, but close enough to the present city to permit residents to commute to work conveniently.

It may be said that this idea is already being executed in the Greenhills Suburban Resettlement Project at Cincinnati. This would be true if we could assume that residents from flooded sections of the Mill Creek Valley would be resettled in the new community, and their former places of abode permanently removed from residential use, either through purchase or through rigid zoning. Perhaps it would be appropriate to suggest expansion of the Greenhills suburb in return for a commitment from the city that it would cause the vacation of an equivalent number of river-bottom dwellings.

There seems a great opportunity here to tie in a constructive housing program with a very destructive flood, and to avoid devoting the nation's resources to the preservation of conditions which ought not to be preserved. It is not exactly logical to spend millions on dams and flood walls to save slums from destruction at the same time that we are embarking on a program of slum eradication. It would be far better to rehouse the people in wholesome, flood-safe suburbs, and turn over the urban lowlands to uses that floods do not seriously damage.

TRACY B. AUGER.

Does Flood Protection Pay?

The Miami Valley of Ohio Has the Answer for Its Region

By CHARLES S. BENNETT
Assistant Chief Engineer, The Miami Conservancy District, Dayton, Ohio

IN many sections of the country the security of life and property has always been jeopardized by floods. They occur periodically and of varying proportions in our river valleys everywhere. Naturally, they are most damaging in those localities that are thickly settled and highly developed. The development of communities along the waterways of the nation has created a great problem, the magnitude of which is increased each year as industry and business expand and encroach further upon the overflow channels of the streams.

The seriousness of this problem was demonstrated during the widespread floods of 1936 in great areas of ten northeastern states resulting from unprecedented rains over the watersheds of nearly every large river from the Canadian border to Virginia. Almost before the ravages of this disaster had been partially repaired, the terrible flood of January, 1937, burst upon the valleys of the Ohio and Mississippi Rivers and created a havoc unparalleled in the history of the nation.

THIS GREAT BASIN IN THE MIAMI VALLEY IS HOLDING BACK MILLIONS OF CUBIC FEET OF FLOOD WATERS, RELEASING THEM SLOWLY TO THE CHANNEL BELOW
Storage occurs only in flood times. The basins are normally empty and ready to function to full capacity when needed

Many are the solutions offered for this baffling problem of flood control and much discussion is current, but

HUFFMAN DAM, ONE OF THE FIVE EARTHEN STRUCTURES WHICH RETARD FLOOD WATERS IN THE MIAMI VALLEY
The reservoir (now dry) behind this dam automatically stores flood waters and permits only so much to pass through its outlets as the channel below can safely carry

discussion is useless unless it is followed by action. The purpose of this story is to briefly chronicle the experience of one community that faced the problem of flood control over twenty years ago, and did something about it, and now is able to estimate the results of its effort. This is the story of the Miami Valley of Ohio.

The Miami River Flood of 1913

In the latter days of March, 1913, the Ohio River valley, including its many intersecting smaller valleys, was swept by a great flood. In the southwestern section of the state of Ohio there is a small river, only 165 miles from source to mouth, along the banks of which are a succession of industrial towns and cities. Between the towns are fertile farm lands and suburban developments. The storm causing the 1913 flood was particularly severe in this locality, and in consequence the Miami River valley suffered from an unprecedented flood. The loss of human life was over 400, and property damage amounted to over $100,000,000. In the cities of Dayton and Hamilton fire aided the flood waters in their work of destruction.

Such protective works as had been constructed in the past were entirely inadequate to protect the cities. The levees and walls were overtopped and washed away in many places. Thousands of acres of fertile bottom-land were stripped of their rich top-soil, other farms were covered with great deposits of heavy gravel and débris. Scores of bridges were wholly or partially destroyed; great areas of street paving were damaged or entirely washed away; mud and silt were deposited in layers in houses, offices, and factories; transportation facilities were entirely disrupted.

Intelligent Study of the Situation

The communities of the valley were prostrated by the calamity. But the spirit of the residents of these communities was not crushed. Immediately after the flood waters had subsided, meetings of the leading citizens of the cities of Dayton, Hamilton, Troy, and Piqua were held, a two-million-dollar fund was subscribed in Dayton alone, and steps were taken at once to inaugurate a study of the whole situation with the object of determining on some means of controlling the rivers so that the catastrophe could never be repeated.

The committee in charge of the fund employed engineers who immediately began a complete and comprehensive survey of the whole situation. It soon became evident that in order to plan intelligently for flood protection in the valley, more information would be necessary than that secured from observations of the results of the latest devastating flood. Data were needed to show how great a flood could occur in the valley, the probable frequency of occurrence of floods of various magnitudes, the behavior of streams in flood conditions, and many other matters that apparently had not been thoroughly studied before. While some of the engineers were busy formulating a plan, others, together with able lawyers and business men, were preparing the legal machinery necessary to permit the ultimate consummation of the plan, and in a surprisingly short time the plan was ready, the means were available to carry it through, and the project was under construction.

Four years after the first great excavator started to work, the Miami Conservancy District project was completed and ready to serve the community.

The Protection Works and Their Cost

Briefly, the protection works consist of a system of river channel improvements and levees in the cities affected, supplemented by the construction of five massive earth dams across the stream valleys above the towns. The purpose of the dams is to temporarily hold back flood waters, the openings through the dams being of such size that no more water can pass through them than can safely be carried by the stream channels below. The whole system operates automatically. There are no gates in the dams, and flood waters are taken care of as they come, without manual control. The entire project is designed to protect the valley from serious damage from the greatest flood that it is computed can occur. The intensive studies and research work in the early stages of the plan made it possible to determine the maximum flood possibilities for this locality.

In accordance with the provisions of the law authorizing such work, the cost is borne by the communities and individuals benefited in proportion to the benefits accruing to such communities and individuals. Bonds were issued to provide immediate funds, and thirty years were allowed for payment of the assessments to retire the bonds. The entire net cost of the project amounted to about 30 million dollars. This is quite a sum for one small community to raise, but it was remembered that one flood caused measurable damages of more than three times that amount, not to mention the intangible losses, such as interruption of business, loss of time, depreciation of property values, and illness to many people as a result of exposure and shock; and not to mention the immeasurable loss of 400 lives.

The Benefits

Nearly sixteen years have passed since the completion of the flood-control project, and it is now possible to set up against the cost the value of the security attained by the expenditure of those 30 millions. Consider the city of Dayton. Here is a community of over 200,000 people, mostly wage-earners, and an unusually large percentage of them home-owners. Here are some of the country's largest industrial enterprises and the great experimental aircraft plant of the Federal Government. The "City of a Thousand Factories" has had a phenomenal growth in the past decade.

Could the old industries have been induced to remain in a flood-swept valley, with the possibility of another catastrophe like that of 1913 ever present? Could new industries have been brought to the city notwithstanding its favorable location, transportation facilities and other inducements, were the old flood specter still around the corner? Flood protection has meant rebirth and new growth to Dayton.

And so it is with the other communities in the Miami Valley. Hamilton, a city of paper mills and tool works; Middletown, with its great steel mills; Piqua, a textile center; all are flourishing towns, their growth unquestionably aided by the security from floods they now enjoy.

The rural districts have likewise benefited, though they are not surrounded by levees as are the cities. The great

THE TAMED MIAMI RIVER FLOWS PLACIDLY THROUGH DAYTON AS UNCHECKED TORRENTS FLOOD NEARBY OHIO RIVER CITIES
This channel can safely carry between its levees twice as much water as was handled in the January flood

retarding dams afford material protection to low farm lands below them, the destructive velocity of flood waters has been reduced, and the menace of complete inundation has been removed.

The farm lands above each of the dams which lie below the elevation that would be reached in the greatest flood are, of course, subject to overflow at intervals. The owners of such lands were compensated by the District for flooding rights. Some lands were purchased by the District. These were rearranged so that each farm would have a building site on high ground, and such lands are being sold back into private ownership. Since the flood season is practically confined to the winter and early spring months, ordinary farming operations may be continued on these lands, and they are actually benefited by the silt deposited on them whenever water is temporarily stored in the basins.

Overcoming Opposition to the Plan

When the flood-control project was first considered, and even during the construction of the works, there were many who opposed the plan, some because they thought it would not work, some because they thought the cost would exceed the benefits, and others just on general principles. This opposition was to be expected. It was overcome by two means. First, those in charge of the plans for the project gave every objector a chance to voice his opposition, and for weeks public hearings were held on the proposed plan. Eminent engineers were called in to check the plans. The amounts of benefits assessed against properties were subject to review and adjustment. Every effort was made to afford all interested parties an opportunity to be heard. The second factor which operated to silence opposition—and this was by far the most effective—was the demonstration of the effectiveness of the control works a short time after they were completed.

One Sunday morning a cloudburst broke over the upper valley, and in a few hours the streams were raging torrents. By late afternoon the flood waters had reached the dams. There they were checked and the streams below rose slowly and moderately. At Dayton the river stage was just half as high as it would have been without the protection works. Thousands of people visited the dams, saw the effective checking of the flood waters, and came home thoroughly convinced that their money had been wisely spent.

When the unprecedented rains of January, 1937, began and continued day after day until nearly ten inches, one-third of the average *annual* precipitation, had fallen in twelve days, the residents of the Miami Valley felt secure behind the protecting banks of the levees in the cities, knowing that the excess waters from these successive downpours would be checked by the great dams, and the river channels in their towns had ample capacity to carry the regulated streams. Their feeling of security was justified, the river in Dayton rose only moderately, and at no time approached the tops of the levees. Business continued as usual, schools kept open, industry operated unchecked.

The 350,000 residents of the Miami Valley feel that they have found the answer to the question: Does flood protection pay? The reply is practically a unanimous YES.

Mayors' Conference Thanks Cities and Officials for Aid in Flood-Stricken Areas

Due to the fact that it has been impossible, as in the case of the American Red Cross and the numerous Federal agencies, to personally contact and thank the hundreds of municipalities which offered aid and assistance in the recent flood disaster in the Ohio and Mississippi River Valleys, I have been requested to publicly thank, through all mediums possible, the cities and the officials thereof that came to the aid of the city governments in the flood area.

The city government of Louisville and Mayor Neville Miller are especially anxious to acknowledge the aid of the police officers who were sent to Louisville in response to his plea for help. To those who may not have received a personal acknowledgment of their offer of aid from the city officials concerned, let me, through the cooperation of THE AMERICAN CITY and on behalf of the several flooded cities, extend grateful thanks.

The flood is over and, of course, the losses in life and property are tremendous. But they would have been worse if it had not been for the magnificent and splendid cooperation of cities from all sections of the United States.

By direction of the United States Conference of Mayors.

PAUL V. BETTERS,
Executive Director.

New Sewage-Treatment Plant Built to Be Attractive

The Bloomington Works Use Native Stone and Spread Buildings Effectively

By CARL B. CARPENTER
Superintendent, Department of Sanitation, Bloomington, Ind.

THE Bloomington sewage-treatment plant is of the trickling filter, separate sludge digestion type. The plant site and property, comprising over 80 acres of rolling hillside, is located about two miles south of the city, between an important, paved highway and the small stream of Clear Creek.

The sewage is received and flows continuously through the plant by gravity, where the following units provide progressive steps in the treatment:

1. Mechanically cleaned bar screens, with conveyor system, both automatically operated, and a gas-fired screenings incinerator.
2. Rectangular grit channels.
3. Rectangular primary settling tanks with sludge-removal equipment and degreasing system.
4. Twin dosing tanks with separate fixed nozzle trickling filters.
5. Circular final settling tanks with mechanical sludge-collection equipment and a separate pumping station for returning final sludge.
6. Heated sludge digestion tanks, equipped for gas collection, flexible control of supernatant liquor, with a central building for sludge control.
7. Covered and open sludge drying beds.

In the plant design, esthetic considerations were assisted, rather than hindered, by economic requirements. The structures are amply spaced and particular attention was given to the architectural treatment. The location of operating units and convenient facilities within the buildings, aside from enabling more continuous and positive plant control, have assisted in maintaining the intent of the design.

Development Plan

The present sewage-treatment works, including intercepting and outfall sewers, comprise the basic structures of a comprehensive plan, the principle of which necessarily recognizes the rough topography of the vicinity, as well as the closeness to the ground surface of underlying limestone in solid formation. In the progressive development of the scheme, the sewage, concentrated in numerous unrelated areas, will be received at various points in the upper limits of an existing gravity system, after being pumped over the drainage divide of a central valley. All sewage received in this valley is conducted by gravity to the plant, through several miles of intercepting and main outfall sewers. The structures of the present central treatment plant are designed for conveniently extending such units as future requirements may indicate.

Nature and Quantities of Anticipated Sewage

The present sewage-treatment plant is designed for treating the sewage contributed by a connected population of 30,000 people and an estimated 1950 average dry-weather flow of 3.75 mgd, equivalent to 125 gallons per capita. The flow is from a separate system and consists almost entirely of sanitary sewage. A considerable amount of roof drainage and some infiltration, however, reaches the sewers during storm periods. Capacity for screening and grit removal for storm flows up to 10 mgd is provided, of which about three-fourths may obtain primary treatment. The trickling filters are intended to receive up to about 150 per cent of the average dry-weather flow. A period of two to six hours is required for the sewage to reach the plant. The intercepting sewers are about 5 miles in length and vary in diameter from 21 to 36 inches. The 39-inch outfall sewer is designed for flows of from 2 to 22 mgd, the higher quantity corresponding to the anticipated requirement of about 1980, for an estimated connected population of 60,000 people.

The Grit-Chamber Building

The superstructure of the grit-chamber building, which is of pleasing architectural design and conforms to that of other plant buildings, encloses the screen equipment and the grit channels. The primary settling unit, not enclosed, is adjacent to and connected with this building. The screenings incinerator and a primary influent pipe gallery, as well as sludge piping and pumping equipment, are located in the basement. The central heating plant, switchboard and employees' toilet are also located on the ground floor.

The Plant Units

Screenings Equipment.—The sewage from the outfall passes to one or both of two bar screens, each located at the inlet end of a grit channel. The screens have clear openings of 1¼ inches and are equipped with automatically operating cleaning rakes. A conveyor system, operating with the rakes, conducts the screenings to a hopper for storage and drainage. The system is enclosed in such manner as to minimize the unsightly condition ordinarily associated with the operation.

The gas-fired incinerator was furnished by the Morse-Boulger Co., and has a designed capacity of 200 pounds per hour of wet screenings. The unit is equipped with

three burners and a blower in addition to essential piping and controls. Screenings are fed by hand into the top, through a charging door located near the storage hopper. An electrically operated telescopic type hoist is provided for lifting ashes from the incinerator room to the ground level.

Grit Chamber.—Previous experience with the local sewage had indicated the need for some grit-removal facilities. The present grit chamber has two parallel channels arranged for combined or separate operation. They are designed for controlled velocities for flows varying from 2 to 10 mgd. An overhead mono-rail and electric hoist is provided to facilitate the removal of retained grit.

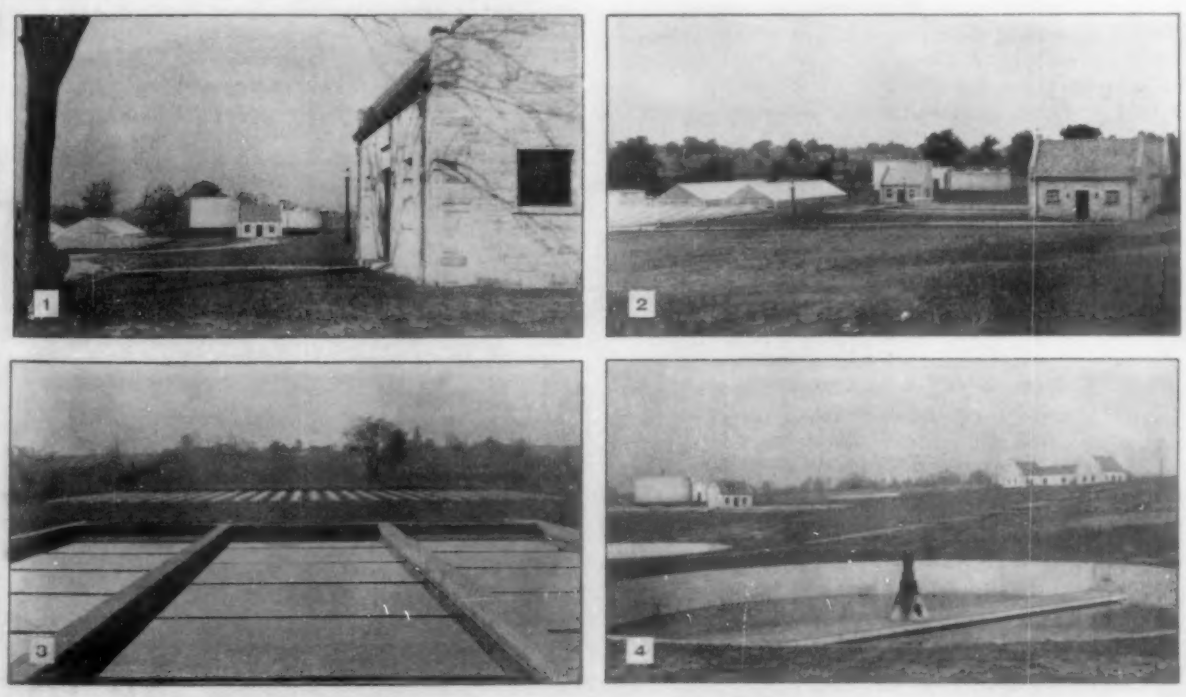
Primary Settling Tanks.—There are three primary settling tanks, arranged for parallel operation and equipped with individually driven sludge collectors and skimmers of the Link-Belt straightline type. The designed detention period, based on the average dry-weather flow, is 2.5 hours. Separate sludge hoppers are provided at the influent end of the tanks, from each of which the concentrated sludge is pumped to the digesters. A degreasing system at the effluent end of the primary unit is arranged to receive and separate scum and oils for burning in the screenings incinerator.

Dosing Tank.—Twin dosing tanks, equipped with trapless siphons and automatic air lock feeds, permit intermittent dosing of alternate halves of the trickling filters. Based on the designed average dry-weather flow, each tank provides a period of seven minutes for filling and two minutes for discharge. The dosing tank is so constructed that the lower part has been utilized as a storeroom and workshop. A venturi meter tube is located in this building and forms part of a gravity pipe line, which conducts the primary effluent to the center feed channel of the dosing tanks.

Trickling Filters.—The two beds of the trickling filters have a total effective area of 1.5 acres and are 9 feet in depth. The filter medium is crushed limestone ranging in size from 2 to 3 inches. The walls and floors are constructed of reinforced concrete. Vitrified filter blocks laid in rows, with concrete strips between, compose the underdrainage system. The beds are equipped for underventilation and arranged for draining the distribution piping. The main drain channels are constructed with precast concrete blocks, and large gates are installed at the effluent end of each.

Final Settling Tanks.—There are two final settling tanks having a diameter of 50 feet and sufficient depth to provide a two-hour detention period, when operating at the rated capacity. These tanks, arranged for radial flow, have a central inlet with peripheral V-notch weirs and final effluent channel. Each tank is equipped with a revolving mechanism which provides a continuous movement of sludge to a center hopper. Pumps, located in a separate structure, at a lower elevation than the liquid surface, are used for returning final sludge, either to the grit-chamber building or to the digesters. A short outfall sewer discharges the final effluent to the nearby creek.

Sludge Digesters.—The two 40-foot-diameter sludge digestion tanks have an effective capacity of 2.5 cubic feet per capita for the designed connected population of 30,000 people. One tank has a Downes floating steel cover, and the other is constructed with a fixed top. Both have hot water sludge heating coils and are equipped for gas collection. Between the digesters, an operating chamber, with a large receiving basin underneath, is equipped



THE BLOOMINGTON SEWAGE-TREATMENT PLANT

1. The office and laboratory building, with the glass-covered drying beds, digesters and sludge-control building in the background. 2. The grit chamber building, with the primary tanks in the center foreground. 3. The surface of the primary settling tanks and the filter field. 4. The final settling tanks, showing the hillside and general panoramic view of the plant

to facilitate the selection and handling of supernatant liquor.

Sludge-Control Station

The sludge-control station, centrally located with respect to the digesters, is a single-story structure, with a two-level floor. The lower level contains sludge pumping equipment and piping, interconnected for flexible control of sludge-digestion operations. This equipment also provides auxiliary means for other sludge-handling operations in the plant.

A hot water heating boiler, circulating pump, recording thermometers and gas control and regulating equipment are arranged on the upper floor level. In addition, there are separate gas meters for each digester. A waste-gas burner is installed on the roof of the building. The hot water system provides heat for both the control station and the sludge operating chamber.

Sludge Drying Beds.—Two glass-covered and two open sludge drying beds provide an area of about 0.53 square feet per capita of designed connected population. The beds are each 40 by 100 feet and equipped with two sets of narrow-gage tracks. Sludge from the digesters flows by gravity to the beds and is applied at three different points on each. The tracks are routed up a ramp to a loading platform, equipped with a mechanical capstan, effecting an arrangement for side-dumping loaded sludge cars into trucks.

Office and Laboratory Building

This building placed about equidistant from the various operating units, is so located as to complete the general scheme of plant structures on the site. It is a single-story building, containing three rooms, and is equipped and arranged as an administrative center of the Department. The laboratory room, including built-in equipment, occupies about 150 square feet and has a storage room adjacent. The office room is of ample size and, in addition to other facilities, contains a master recording flow meter, which controls an indicator meter in the grit-chamber building. The floors are of terrazzo and the walls are plaster finished.

Buildings and Grounds

Although the requirements relating to the most effective and economical operation were a principal objective in the design and arrangement of plant structures, consideration was also given to the attractive appearance of buildings. The architectural design embodies a sturdy simplicity, accentuated by the construction materials. Indiana limestone, quarried and prepared locally, was used in the exterior walls of the superstructures. This stone is of rustic buff color and is laid in random ashler. The roofs are covered with slate shingles, of neutral color tones, with Boston ridge. With the exception of the office building, the interior walls are faced with smooth, buff-colored brick.

The original rolling ground surface of the site presents a pleasing setting for the plant structures. In the entire arrangement and relative location of each, the existing topographical features were fully utilized. A minimum amount of resurfacing was required. New slopes have been sodded and other areas seeded. In the completion of the landscaping plan, now being carried out, trees and shrubbery native to the local vicinity will be used in such manner as to blend naturally and unobtrusively with the surrounding countryside.

Costs

The Bloomington sewage-treatment works, including intercepting and outfall sewers, as well as a pumping station and force main for an outlying area, were constructed during 1934 and 1935 and financed through a loan and grant by the Public Works Administration. The cost of the sewage-treatment plant construction was $275,000. With the intercepting sewers, the total cost of the project was $500,000.

The Bloomington sewage-treatment works, including intercepting and outfall sewers and appurtenances, were designed by Charles H. Hurd, consulting engineer, Indianapolis, who also supervised the construction. T. A. and J. R. Moynahan, Indianapolis, were general contractors on the treatment plant and pumping station. John Dehner, Inc., Fort Wayne, Ind., was the general sewer contractor.

Minnesota Plants Want Revenue Bonds, and Exchange of Power

THE following resolution was adopted at the recent biennial legislative conference of the League of Minnesota Municipalities.

WHEREAS, municipalities under authority of law do now own and operate numerous utility services including light, power, heat, gas, water and sewage treatment, which are revenue producing and entirely self-supporting, and

WHEREAS, capital expenditures in these utilities can be financed only by general obligation bonds where it is necessary to borrow money for that purpose and there is no authority under the general statutes of Minnesota to issue securities to be paid only out of revenues of such utilities;

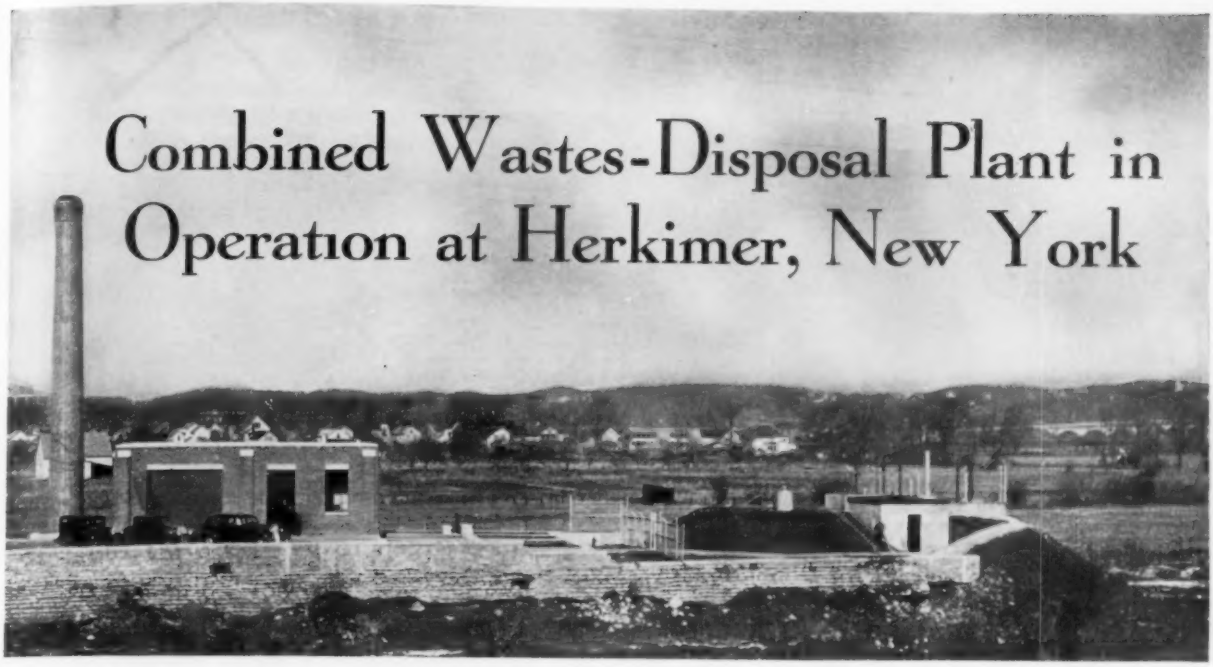
RESOLVED, that the League of Minnesota Municipalities again request and support legislation which will give municipalities that operate or that have been authorized to establish any public utility as aforesaid the authority to issue securities to finance the construction and extension of such utilities, which would be limited obligations payable out of earnings only.

WHEREAS, the business of supplying electricity requires adequate generation equipment to furnish continuous service twenty-four hours per day, and

WHEREAS, isolated municipal electric plants operating independently of such plants in other municipalities require a considerable outlay for duplication of equipment to provide and assure them of being able to supply such service, which cost becomes almost prohibitive where rural territory is being supplied with energy under rural electrification programs;

RESOLVED, that the League of Minnesota Municipalities support legislation which will permit any municipality owning and operating its own electric generating system to extend its lines to the corporate limits of any other city or village which also owns and operates an electric generation plant and by mutual agreement to buy energy from or sell electric energy to such other municipality at a reasonable contract price when the breakdown of equipment or some such emergency makes this necessary.

Combined Wastes-Disposal Plant in Operation at Herkimer, New York



Plant Officially Started December 15, 1936—
Handles Sewage and Refuse of City of 10,500

FIVE weeks from the day the new combined wastes-disposal plant at Herkimer was placed in operation, the heat of the sludge digester reached 82 degrees and gas production started. This situation, in winter, is quite different from that of most sewage-treatment plants, which operate without the benefit of heat from a refuse incinerator from the start. Like its predecessor, the combined plant at Canajoharie, N. Y., designed by the same consulting engineer, the new Herkimer plant houses the controls of both waste-disposal processes under one roof, and has many interlocking, mutually helpful operations based on heat exchange and the disposal of waste products of the one process by the other.

The Incinerator

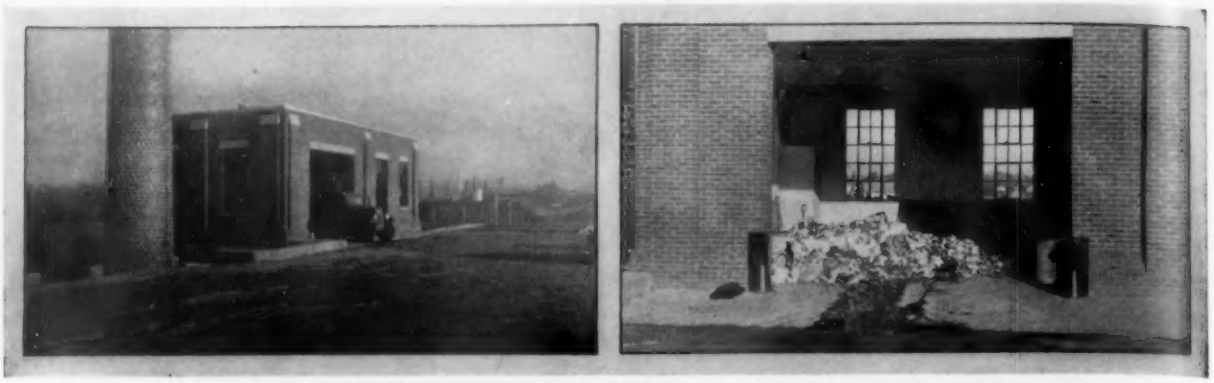
The combined plant is located about one-half mile from the center of the city, on the Mohawk River, and, as in the case of all incinerating plants, the chimney is the outstanding physical feature. The inside diameter of the chimney is 3 feet, and its height is 75 feet from the stoking room floor, with fire-brick lining throughout. The wastes-disposal plant building measures 50 x 25 feet, with the incinerator section nearer the entrance gate. The refuse-collection trucks deliver the refuse to the incinerator floor, which is at the same grade as the street. A steel rolling door provides an entrance opening 12 feet high by 14 feet wide.

Garbage and refuse collection in Herkimer is handled by contract, with collections throughout the city once each week, together with daily collections from hotels, restaurants and markets. The men on the trucks are instructed to load the refuse so that readily combustible material, such as cartons and crates, are kept separate and near the tailboard of the truck. When the truck reaches the charging room floor, these combustibles may be removed first and thrown into a chute at the right-hand side of the charging floor, so that they may be available on the stoking floor, to start the burning grate fire or to feed the grate direct when in operation. With digester gas available as an auxiliary fuel, this operation will be curtailed, increasing the percentage of combustibles reaching the suspended grate.

All garbage and some rubbish have been collected in Herkimer for many years and delivered to the dump. In November, newspaper articles, talks and "dodgers" solicited more rubbish and recommended wrapping garbage in paper bundles. The response to this educational campaign was unexpectedly favorable, and the combustibles in the mixed refuse improved markedly. The design did not anticipate satisfactory temperatures during incineration of the originally collected material, and foresaw the need of occasional temperature boosts by an auxiliary fuel, namely, digester gas. The refuse is dumped on three sides of the charging chute, which is 3 feet square and delivers the material to a modified Decarie incinerator, having a rated capacity of one ton per hour and a test capacity of over 1.33 tons per hour.

The heavy cover of the charging chute is lifted by a manually operated Electro-Lift hoist running on an 8-inch trolley beam which is bent to the arc of a circle from the right-hand side of the incinerator door, where the ash chute is located, past the location of the charging chute and thence on a tangent to the screen well. By means of this trolley, ashes from the stoking-room floor can be raised and emptied into a truck, the cover of the charging chute can be raised for charging the incinerator, and the drained sewage screenings can be lifted and conveyed back to the charging chute for disposal into the incinerator.

The incinerator has a drying grate or pipe basket, set above the burning grate, and this suspended basket receives



GENERAL VIEW OF THE COMBINED WASTES-DISPOSAL PLANT AT HERKIMER FROM THE ENTRANCE GATE, AND A CLOSE-UP OF THE CHARGING FLOOR OF THE INCINERATOR

the charge of refuse, dries it out and the dried material either falls to or is stoked to the main grate below. Forced draft is provided by a Rexvane fan driven by a 2-hp G-E motor, and this apparatus is used intermittently as required. This blower takes air from the charging-room floor or from the stoking-room floor, or both, so that dust or odor emanating in either location can be quickly dissipated. During the summer the air supply will be taken from the stoking-room floor, to cool this room, to cool the refractories in the incinerator roof and partially preheat the air supply. In any case the supply of air passes through the forced-draft fan and its ducts, whether the fan itself is in operation or not.

On the stoking floor is also located an International coal-fired hot-water boiler for emergency hot-water service in the plant. This coal boiler will ordinarily be replaced by the use of a Bryant gas-fired boiler, adjacent to it, which will be placed in service as soon as a quantity of digester gas is available. The gas-fired boiler is equipped with a P.F.T. flame trap. At the south end of the stoking floor proper, there is also located a small coal bin, a washroom with showers, a large workbench and a considerable space available for filled or empty ash cans.

Hot-Water Accumulator

In the standard Decarie incinerator, water circulation between the pipe headers and a steam drum cools the basket grate piping. In the Herkimer installation the pipe basket and their small headers were developed to provide heating surface for a hot-water heating system. The basket headers, together with additional coils, are connected to a 3,000-gallon accumulator tank, and a forced circulation of return water is provided. During the run of the incinerator the temperature of the hot-water tank is raised to an average of about 200 degrees, throughout.

A separate circulating system drawing on the hot-water water accumulator is connected to the heating coils in the sludge digester. The temperature of the water admitted to this circulating system is automatically controlled by Tagliabue air-operated diaphragm valves and controllers, which permit a mixture of cool water with the hot water from the top of the tank when this tank temperature is too high. In order to keep the valves from fluttering and thereby stabilizing the regulation, a small mixing tank is provided in which the cooler water enters at the top and hot water at the bottom. Return water from the digester coils, which is circulated by a Worthington Monobloc pump, is used for the cool water in the mixing tank. A recording and indicating gage with a temperature controller is located in the operator's office on the first floor of the plant, and this controller holds the temperature of the water delivered to the digester coils within a range of 10 degrees of any desired temperature. The controller is ordinarily set to supply a temperature of from 125 to 135 degrees to the digester coils.

Office and Laboratory

In the office, which also houses a small laboratory, is the Simplex recording gage with a 24-hour chart, reading directly the gallons per day of flow per lineal foot of weir in the effluent manhole. In other words, the recorder does not register heads on the weir but traces the flows corresponding to those heads per weir foot. A Trumbull drawer type electric control panel is located in the office and contains the fuses for all the electric circuits in the plant. When one of these drawers is pulled out, the circuit is broken. The fuses for the circuit are set in clips on the back of the drawer, so that fuse replacement can be made by the operator on dead clips. Controller switches for the Jeffrey sludge conveyor for starting, stopping and reversing the conveyor are located in the office.

The Sewage-Treatment Plant

Sewage from the city has been intercepted by a short length of 21-inch sewer which diverts the flow from the Mohawk River to the new plant. The sewage first passes hand-raked bar screens with 1¼-inch clear openings. The screenings are raked onto a perforated plate and allowed to drain before being shoveled into a can, which is raised by the electric hoist and emptied into the incinerator. A large counterbalanced steel cover fits over the screen and drainage plate areas, so that no odors from the screenings rise into the screen room.

The pumping equipment consists of three vertical, top-suspended, Domestic, 450-gpm centrifugal pumps, driven by vertical hollow-shaft G-E motors and controlled by G-E automatic float switches. The shafts of the pumps are supported on the motor thrust bearings and can be lowered for cleaning or removal without dismantling the unit. A sump in the pump room is de-watered by a float-controlled water eductor, while the remainder of the basement floor and the drainage from the charging room is delivered to the sewage pump well.

The three pumps discharge vertically against the metal cover plate of the influent channel which runs along the

north side of the building to the settling tanks. This splash plate aeration liberates the sulphides from the sewage, and these gases escape through a vent to the top of the building. The suction well and screen, underneath the level of the screen room floor and the metal cover of the screen and drying area are vented to the roof by means of the roof conductors which discharge into the suction well, while the effluent chamber which contains the measuring weir is vented at the roof of the building by separate piping.

Located adjacent to the pump room, and under the main corridor of the building, is the gas compressor room in which two duplicate Roots-Connersville gas pumps with 3-hp G-E motors are located. The gas compressors maintain a 4-pound pressure in the supply line to the gas burners extending through the walls of the incinerator, and these burners operating under this pressure produce a projected flame not disturbed by the furnace draft. Two burners are located in the end of the furnace and project heat into the burning area between the firing grate and the suspended basket. A third burner projects a flame across the flow of combustion gases as they pass over one bridge wall and under another on their way to the combustion chamber. The three gas burners have a combined capacity of 3,000 cubic feet of gas per hour. They will be used to start fires and as temperature boosters to maintain a steady high temperature incineration, thereby avoiding smoke and incomplete combustion. When the incinerator is not in use, namely, about 17 hours daily, some digester gas will be used in the gas-fired boiler to add to or maintain the temperatures of the hot-water accumulator tank. The remainder of the gas will be stored during this 17-hour period and conserved for high rate use in the incinerator gas burners.

As this article goes to press, we learn that sufficient quantity of gas has been produced to make possible a thorough test of the Ensign-Reynolds gas burners. The tests proved most satisfactory, and the flame projection was of greater length than anticipated. The two end burners projected their flames over the burning grate and were deflected upward at the end by the forced draft, so as to strike upward into the center of the pipe basket and attack the material there. The burner set to project across the incinerator near the combustion chamber, shot a flame for three-quarters of the distance, and the end of the tongue of flame was diverted into the combustion chamber itself. It is also reported that though the sludge tanks were not put into initial operation until December 23, 1936, the production of sludge gas reached about one-third of normal production on February 17, 1937, eight weeks after heating and conditioning started.

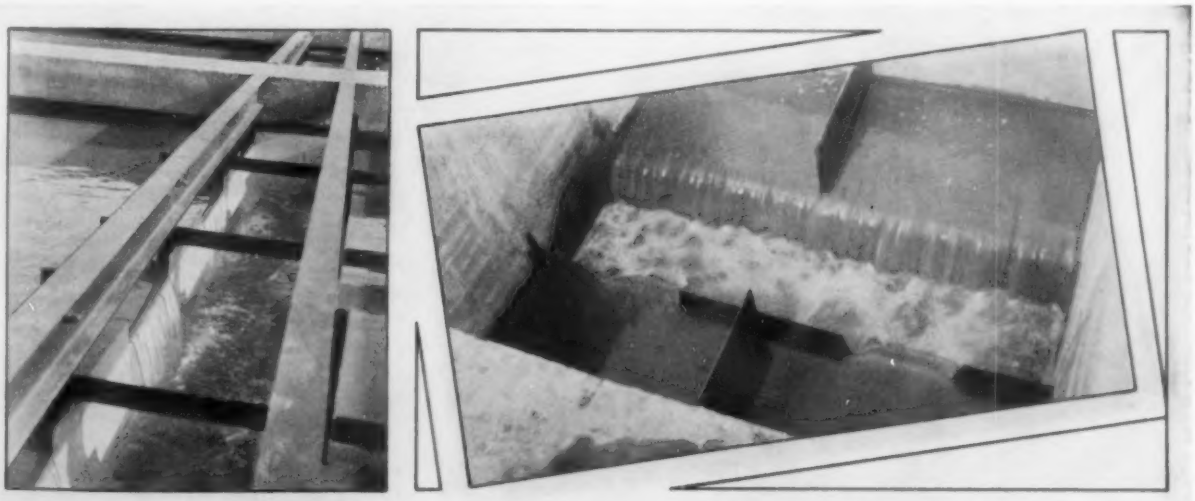
In the gas compressor room, there is also located the Thrush Circulator which provides circulation between the hot-water storage tank and the incinerator coils. This circulation is rapid enough so that the top and bottom temperatures of the tank do not vary by more than 20 degrees. Here also is the plant water-supply connection, which is controlled by a diaphragm reducing valve to maintain a constant pressure of about 12 pounds on the hot-water heating system. A relief valve provides for escape and expansion of water vapor in the hot-water system.

Settling Tanks

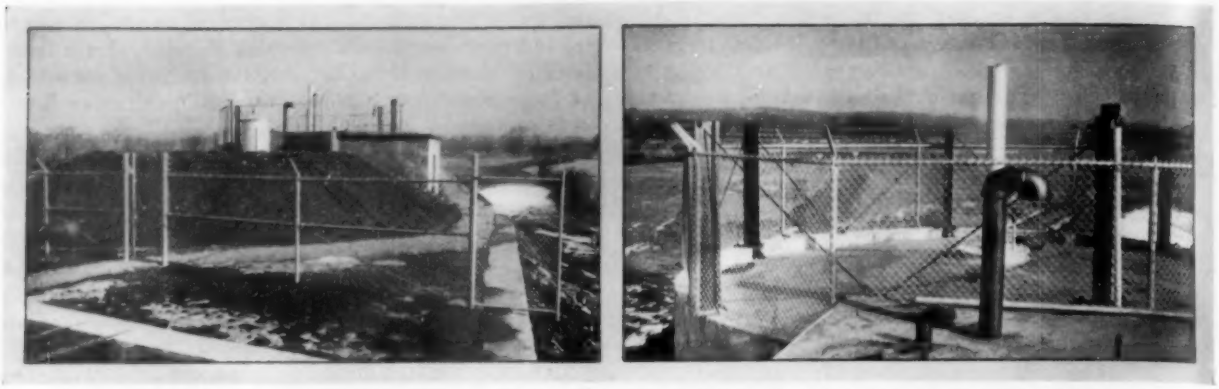
The flume into which the sewage is discharged by the pumps extends across the influent end of the settling tanks. Underneath this flume lies a pipe conduit which holds the gas and water pipes and electric cables extending between the plant building and the control house of the two sludge digesters. Access to this conduit is provided through three manholes and removable wood panels in its north elevation.

The sewage from the influent channel flows into the two settling basins through ten ports in each basin. The present operation of the settling tanks is in parallel.

The Jeffrey sludge conveyors, running at 2 feet per minute, carry the sludge toward the influent end and into four sludge hoppers which are equipped with sludge risers for the withdrawal of the fresh sludge to a central manhole in the center wall of the basins. The settling tanks are 6½ feet deep at the influent end and 9 feet deep at the effluent end. The sewage effluent is collected by a metal flume running across the tanks at a point 8 feet from the end wall. To forestall the possibility of a dead area



THE TRANSVERSE EFFLUENT FLUME 8 FEET FROM THE END OF THE SETTLING BASIN, AND THE SEPARATE EFFLUENT WEIRS FOR SETTLED SEWAGE FROM THE TWO TRANSVERSE WEIRS AND THE TWO U-SHAPED EFFLUENT HEADERS



GENERAL VIEW OF THE DIGESTERS FROM THE SETTLING TANKS, AND A CLOSE-UP OF THE FLOATING COVER ON THE EASTERLY DIGESTER

at the deeper end of the tank, effluent pipes or headers shaped in the form of a U have been installed just clear of the conveyor sweeps to serve this bottom angle of the basins. The sewage from these pipes flows to separate weirs and is controlled by separate valves, so that the amount of effluent withdrawn from the tanks at this level can be manually controlled.

The Digesters

To the east of the settling tanks are two 28-foot diameter digesters, 20 feet deep with a rectangular control house located between them. In the 6-foot area between the walls of the digesters there is located a 6 x 6-foot compressed air sludge ejector, manually controlled. The sludge withdrawn from the sludge pockets flows by gravity through an 8-inch sewer line to this ejector. The ejector discharge extends to the roof of the control house, and the discharged sludge may be delivered to the inlet piping of either of the tanks.

In the control house are valves permitting the manipulation of the fresh and digested sludge in and out and between the two tanks, together with valves and piping for tank overflows, withdrawal of sludge liquor and sampling of sludge and liquor. The two tanks may be maintained in hydraulic balance, or they may be operated in parallel or in series or under different hydrostatic conditions. These tanks are now operated as primary and secondary digesters in a stage digestion. The west digester has a concrete cover, while the east tank has a Downes floating cover. This floating cover is equipped with a 5-foot drop curb and roller guides extending above the digester wall, and will store 3,000 cubic feet of gas. A pressure-reducing valve control makes it possible to store 1.5 feet of gas under the fixed cover. This combined gas storage makes possible the use of sludge gas at rates 15 times the rate of gas production, and provides an auxiliary fuel for the incinerator subject to intermittent use at high rates.

Two Worthington Monobloc compressors in the control house compress air for the operation of the sludge ejector. For jetting top sludge and for agitation of the digesters, a Worthington 3,600-rpm Monobloc centrifugal pump, driven by a 5-hp G-E motor, draws hot sludge liquor from any one of six outlets in the two digesters and discharges this liquor through ¾-inch jetter nozzles in the gas domes at 45 pounds pressure. The jetters can be raised or lowered to strike different horizontal strata of the digesters and can be revolved to discharge against any point of the periphery. Gages are provided in the control house to show the level of the water surface in each digester, the gas pressure in feet of water, and the position of the floating cover, together with the depth of gas storage.

Sludge Beds

The plant has 12,000 square feet for sludge drying, divided into six beds, with underdrains 1 foot below the surface. The sludge beds are located on low land to the northeast of the plant and are protected by dikes against river flooding. The digested sludge from the digesters flows to the sludge beds by gravity through a cast iron main.

Costs

The engineer's final estimate discloses a total cost of approximately $80,000, which includes the cost of construction, land, engineering and miscellaneous items of overhead. Of this amount, Herkimer provided $45,000 through a General Obligation bond issue, the remainder, appproximately $35,000, being supplied by the Government as a grant on this PWA project. The facilities supplied will for both processes serve a future population of 15,000, and the per capita cost for both processes is less than $6 gross and about $3 net to the municipality. The plant will be operated by one operator under the direction of D. Bennett Rasbach, City Engineer, who will occasionally supply this operator with additional help for an hour or two per day when assistance is needed.

The Herkimer, N. Y., Wastes Disposal Plant was PWA Project NY-1062-R, the PWA contract being let to the Underpinning & Foundation Co., of New York City. Henry W. Taylor, consulting engineer, New York City, prepared the plans and had supervision of construction and operation. Construction work was under the immediate direction of D. Bennett Rasbach, City Engineer. The general contract was executed with various sub-contractors such as the Decarie Incinerator Co., the Kellogg Co. and H. J. Brandeles Co.

Municipality to Sell Electrical Appliances

Electric Home and Farm Authority announced on February 15 that a contract had been closed with the city of Dyersburg, Tennessee, which owns and operates the local municipal utility. The contract provides that Electric Home and Farm Authority and the utility will cooperate in financing the sale of electrical appliances for use by consumers located on the utility's power lines.

Safer Motoring in Bridgeport

Over Four Miles of Raised Medial Strips Replace Street-Car Tracks and Divide Traffic

By FREDERICK E. TOQUET
City Engineer, Bridgeport, Conn.

THE creation of traffic islands on main thoroughfares in Bridgeport, particularly where street-car tracks have been removed, has attracted the attention of motorists and produced much favorable comment from the hundreds of thousands of automobile drivers who pass through Bridgeport on U. S. 1-Alternate. The work on the most recent 5,000-foot project was done in cooperation with the local Works Progress Administration, materials and tools being furnished by the city, and labor by the Federal Authority. As yet no records are available offering a reasonable comparison between accidents before and after the construction of these raised medial strips. There is no question, however, but that the forcing of careless drivers into definite one-way channels does make for safety, and the streets are now far more pleasing in appearance.

Driving for many years and over thousands of miles of pavement, becoming familiar with locations noted for frequency of accidents, witnessing serious mishaps, and observing the tendency of drivers to respect obvious physical obstructions to travel as against lamentably frequent disrespect accorded all mere markings and signs however conspicuously made and placed, one inevitably comes to several unhappy conclusions.

First, the caution born of the primitive notion of self-preservation, with which the usual beginner may be overstocked to the point of timidity, diminishes with driving practice until the urge to "go places" ahead of the crowd begins to take on a too dominant importance at the expense of caution, and other people's rights.

Second, in the main the haste is out of all proportion to the importance of arriving a few minutes sooner, considering the practical certainty of arriving many minutes later if even a minor accident happens, or the grave danger of never arriving at all if a major accident occurs.

Third, a long tangent invites speed, and when substituted for a series of curves shows an increase of accidents especially when lanes of opposite direction are not effectively separated.

A central island, or esplanade, affords a separation and a reduced hazard to vehicles traveling within one lane in a given direction, by preventing any car from overtaking and passing one ahead, through the dubious trick of encroaching upon the lane belonging to those who are headed the other way and then dodging back again, or trying to do so. It further eliminates hazard to vehicles in both lanes as far as head-on collision is concerned. Furthermore, the esplanade not only forms a safety zone, but insures greater safety for pedestrians who, because of it, have but one direction to watch at a time when crossing the vehicle lanes.

In the early summer of 1934, Bridgeport began building.

NORTH AVENUE, A SECTION OF U. S. 1-ALTERNATE, IN BRIDGEPORT, CONN., GREATLY IMPROVED FOR TRAFFIC AND IN APPEARANCE BY THE REMOVAL OF STREET-CAR TRACKS AND THE CONSTRUCTION OF THE RAISED MEDIAL STRIP TO DIVIDE TRAFFIC GOING IN OPPOSITE DIRECTIONS

these esplanades on Park Avenue, one of its principal north-and-south thoroughfares. Where the distance between sidewalk-curbs is 50 feet, which is the minimum for this street, the central island is 5 feet wide, also curb-protected, thus leaving 22½ feet of width for each vehicular lane. There are now four of the heavier-traveled streets thus improved for certain distances. These are:

Park Avenue	15,000 feet
North Avenue (Federal Route 1A)	5,000 "
Water Street (Plaza)	500 "
Crescent Avenue	500 "

While the public consensus is now unquestionably favorable, the introduction of this plan was the occasion of much adverse comment. Driveway intersections at right angles to the streets, especially those used for business purposes, were cases for controversy and accordingly were well tested with automobiles of long wheelbase. Sharp-cornered intersections of lateral streets were also tested, with automobiles and long-geared fire apparatus. It was found that no serious interference would be imposed by the layout. It is probable, however, that 22½-foot lanes are as narrow as is practicable for streets of heavy traffic.

At intersecting streets the esplanades are interrupted by clear spaces equal to, or greater than, the width of the lateral street. The minimum opening is 50 feet.

In addition to the safety consideration, this work has been taken advantage of to improve the appearance of these streets. Although the esplanades are, for the most part, only 5 feet wide, the introduction of grass and shrubbery has worked out satisfactorily.

John Nolen's Vision and Leadership

ON February 18 the planning profession lost one of its major prophets, and the municipalities of the United States a counselor whose vision and leadership were a dynamic force in advancing the science and art both of city building and of community life.

John Nolen was too well known to the readers of THE AMERICAN CITY to require an extended biography or appraisal of aims and achievements. More appropriate it is to recall the fact that the very first issue of this magazine —that of September, 1909—carried as a leading feature a paper which Mr. Nolen had presented before the American Civic Association. From this forward-looking discussion of "City Making" the following excerpts are quoted. Especially significant were Mr. Nolen's advocacy of zoning—seven years prior to the adoption of the first comprehensive zoning ordinance in the United States; and his appreciation, decades ago, of the significance of the street system in the urban pattern, and of other problems which, where planning has been inadequate, have become increasingly acute in the intervening years.

FROM JOHN NOLEN'S 1909 DISCUSSION OF "CITY MAKING"

"City Making or City Planning is simply a recognition of the sanitary, economic, and esthetic laws which should govern the original arrangement and subsequent development of our cities. These laws, however, are not easily understood nor applied. They are themselves complex and each must be adjusted harmoniously to the other, so that health, utility, and beauty may each have proper consideration. Then the conditions to which these laws must be applied are exceedingly varied, each city being different in some respects from every other, parts of the same city different from its other parts, and the same parts often varying in their use and purpose from decade to decade.

"Considering that little or nothing has been done in most of our cities and towns to provide intelligently for their plan and growth, it is not surprising that they are monumental examples of what man can do to produce inconvenient, unhealthy, and unlovely surroundings. The most callous are at last awakening. In a dim sort of way, as an English leader in city improvement has recently pointed out, many persons understand that the time has come when art and skill and foresight should control what hitherto has been left to chance to work out; that there should be a much more orderly conception of civic action; that there is a real art of city making, and that it behooves this generation to master and apply it.

"The interrelation and interdependence of these sanitary, economic, and esthetic laws is a point not to be longer neglected. Heretofore we have thought that we could follow one regardless of the other, but experience has taught us otherwise. At last we know, for example, that there can be no great and permanent business success without providing convenient sanitary surroundings; indeed not without surroundings which have the mark of beauty, if by beauty we mean fitness and appropriateness.

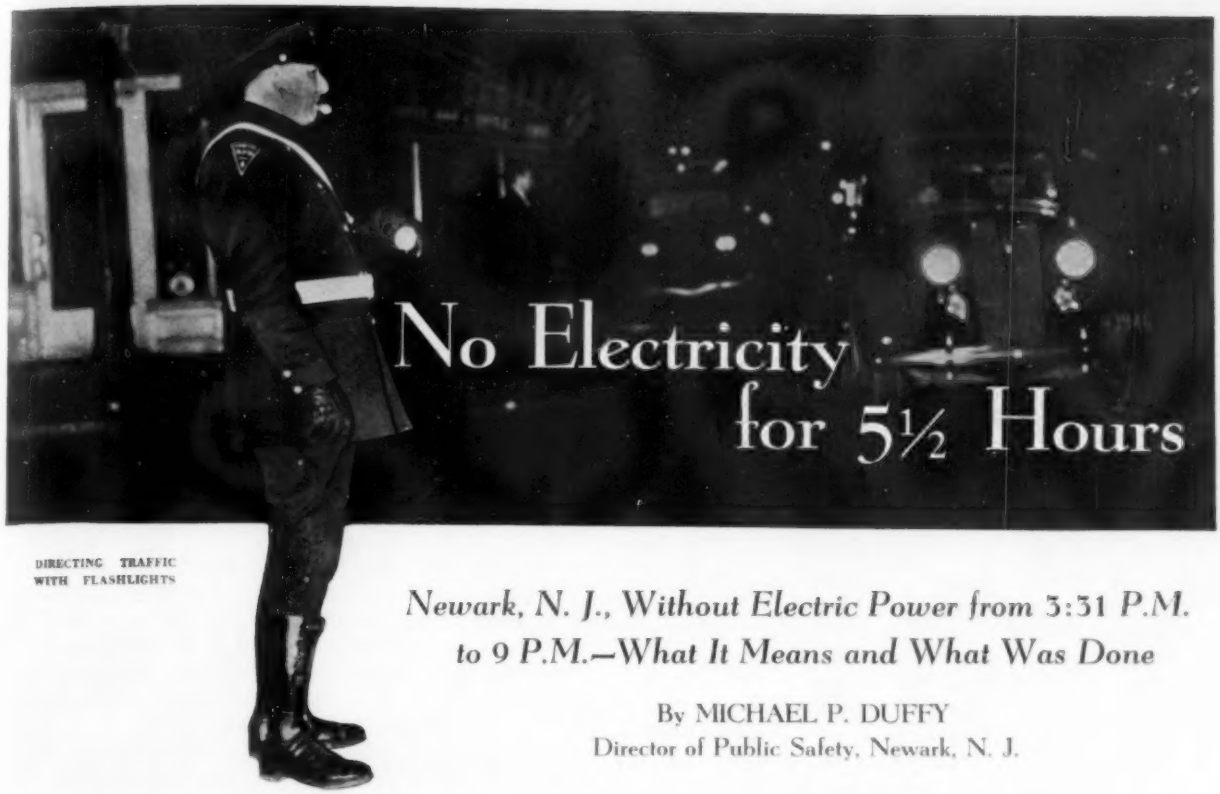
* * *

"A more adequate solution of the problems of circulation would alone justify city planning on its practical side. Our cities will remain inconvenient, congested, and ugly until we understand better the place and function of the street—where it should go, how it should be divided, what it should look like, and the need for differentiation between one street and another. Different streets have as different functions as different buildings. Unless they are carefully located and designed to fulfill these various functions, there must inevitably be incalculable loss and waste. We have curved streets where they should be straight, straight streets where they should be curved, narrow streets where they should be broad, occasionally broad streets where they should be narrow, and no street connection at all where one is imperatively needed. We have streets too near each other and streets too far apart. Illustrations could readily be given of each of these mistakes in street planning. Then when the location, the grade, the width and the distance from one another are right, the street is undeveloped, lacking those features which are essential to its proper appearance and agreeable use.

"The subdivision of our cities and towns into parts, each to serve a peculiar need, is a subject to which we have hardly turned attention. We must consider the value of the 'zone' treatment used in European cities, each zone controlled by different regulations. It is a method that we must soon adopt if we are to avoid the waste and folly that characterize our cities at present. Homogeneity of neighborhoods and stability of real estate values are points of importance.

* * *

"Intelligent city planning is one of the means toward a better utilization of our resources, toward an application of the methods of private business to public affairs, toward efficiency, toward a higher individual and higher collective life. If we want such substantial things as health and wealth and joy, if we want the equally indispensable element of beauty in our daily lives, if we want to avoid waste of money and time, we must find ways to avail ourselves more fully of the incalculable advantages of skillful city planning."



DIRECTING TRAFFIC WITH FLASHLIGHTS

No Electricity for 5½ Hours

Newark, N. J., Without Electric Power from 3:31 P.M. to 9 P.M.—What It Means and What Was Done

By MICHAEL P. DUFFY
Director of Public Safety, Newark, N. J.

AT 4:12 P. M. on Monday, December 28, 1936, a still alarm developed into a major crisis which put out of service most of the city of Newark, N. J., including the entire business section, the traffic signals, police radio transmitter and receivers, and the teletype system.

The fire occurred in one of 105 3-phase 13,000-volt circuit breakers on the fifth floor of the Essex generating station of the Public Service Electric Co., at Point No Point on the Passaic River meadows, one mile from the city. Soot deposits from the burning oil settled on the transmission busbars on the sixth floor, causing short circuits. Ordinary hose streams were out of the question.

What caused the fire and how to put it out were not the immediate concern of the Police Department, whose job was to maintain contact with headquarters, discipline throughout its ranks, and constructive contact with all the elements involved.

The police signal system continued to function with no interruption. In accordance with an emergency patrol-duty schedule devised for exactly such an emergency, the radio-equipped cars used the 263 police-signal boxes which are connected not only with the precinct stations but to the radio broadcasting room as well.

Radio patrol cars were stationed at police boxes during the electric power failure from about 4 P. M. to 9 P. M. We were in constant communication with at least one car in each section of the city. The 25 cars were on patrol at all times when they were not at a police signal box.

Batteries Operate the Police Telegraph

The police signal system functioned because we maintain a battery for each signal circuit, and consequently have a power supply for this service that is independent of the commercial electric supply. There are four signal circuits in each of the four precincts, and each circuit is energized by primary cells.

A battery of dry cells is also maintained to assure operation of the telephone system, which, though independent of the signal system, works in conjunction with it and has the same number and size circuits as the signals have. The reliability of the service of the police signal system must not be overlooked. Regardless of how police radio develops, the police signal system will continue to be not only a valuable auxiliary to the radio system but a necessary adjunct to the operation of the Newark Police Department.

Heavy Traffic Handled Safely

Greatest congestion of course occurs at the close of the day, and as afternoon waned on December 28, no lights came on to help motorists, pedestrians and officers. There were no street lamps, practically no store or office lighting, no electric signs, no traffic signals. Here was an emergency of the first water, a disaster in the making, modern traffic to be handled by "horse-and-buggy" equipment. Each human element in the situation acted in accordance with its nature. The motorists turned on their searchlights. Pedestrians did their best, guided only by the lights of the automobiles and trolley cars—whose 660-volt supply was not involved in the Essex station trouble. The police quickly and quietly mobilized and came through on every front without a single serious mishap or crime.

Newark's business district is one of the heaviest traveled areas in the entire country. Broad at Market Street has long been compared with New York's Times Square. There, as at other intersections, police flashlights gave the "come ahead" signals to the creeping traffic. The day traffic officers were on duty with the night men. Four buildings

served by their own isolated plants were lighted—City Hall and the adjoining police headquarters building, and the Bamberger department store, and the Newark Evening News Building.

The General Situation

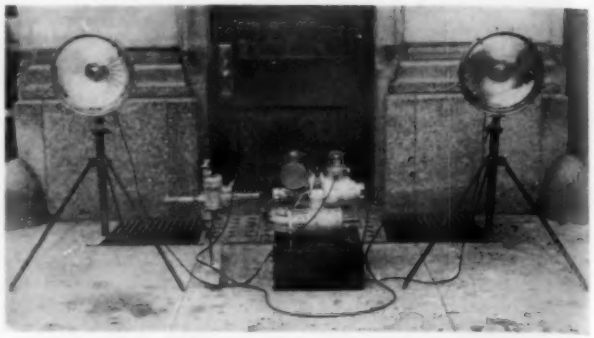
It is difficult to picture or to comprehend what it means for a large city suddenly to be without electric power. The mechanics of modern life were adjourned by the interruption of the power needed for the operation of machinery, oil burners, elevators, hospitals, and also the beacon lights and radio at the busiest airport in the world.

The police operators were busily engaged in answering all calls and dispatching men on errands of mercy. Six of Newark's hospitals were without electric power, and emergency operations were performed by candlelight, gasoline-air lamps, flashlights, floodlights.

Housewives and business men demanded instant restoration of light in their homes and office buildings in which elevators were suspended between floors. Industrial plants came to a standstill. At the Post Office, mail was delayed. Electric-driven pumps shut down in one office building, and sewage backed up until a portable generator connected to the syphon pumps corrected the condition until auxiliary equipment was provided by the owner. The public disquiet and the volume of calls to headquarters may be gaged by the amount of telephone business handled in the city that day—694,000 calls compared with 593,400 calls on December 21 in the midst of the Christmas rush. New Jersey Bell Telephone service was maintained because in addition to commercial electrical service it had storage batteries available. Consequently, when Public Service power was cut off, the telephone batteries were thrown on, and full service continued.

Newark's airport was in complete darkness, with hundreds of passenger lives endangered by the possibility of incoming planes colliding with unlighted smokestacks and other projections. Fortunately, the radio range station at Elizabeth, the beam of which directs pilots to Newark,

PROVED WORTH WHEN ALL OTHER MUNICIPAL COMMUNICATIONS WERE OUT



PORTABLE ELECTRIC GENERATORS WERE OF INESTIMABLE VALUE IN FURNISHING LIGHT AT VITAL POINTS

One of Newark's 89-pound Homelite generators connected to Curtis floodlamps and an electric drill. At Newark post office, one generator furnished light and another was used to operate the cancelling and stamping machines. Jersey City, Irvington and Bloomfield also furnished units and The Homelite Corporation sent in eight

remained in operation. Another fortunate factor was perfect flying weather. After dark, the signaling methods of earlier days were resorted to. The movements of incoming and outgoing planes were directed by a battery-operated signal light. Green was permission to proceed. Red, to a plane on the ground meant STOP, and to a plane in the air meant CIRCLE THE FIELD BEFORE LANDING.

As a result of previous weekly educational lectures, motion pictures and exhibits in churches, schools, civic and fraternal organizations, on Newark's modernized emergency service, showing the training of the crews and the possibilities of 300 life-saving devices carried on two high-powered trucks, a wrecker car and an oxygen-carrying car, there were hundreds of calls requesting immediate service to protect life and property.

Two Emergency Trucks Make 16 Runs

The Newark Emergency Police Division, second to none in the United States, in its 18 months of operation had responded to 6,000 runs, given first aid to 1,700 victims of accidents and saved 105 lives. Had we been without the services of such a well-organized division during this calamity, it is possible that serious consequences might have resulted. It proved its worth.

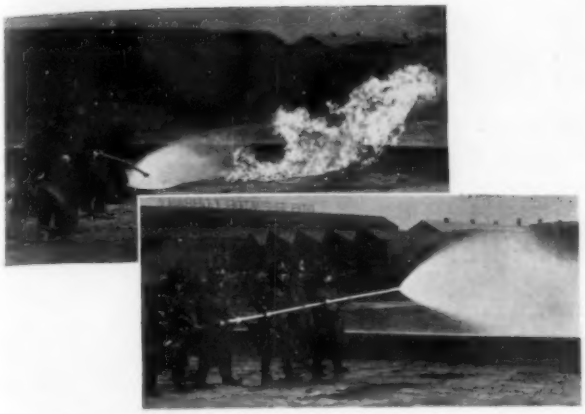
Extra squads of emergency men were continually manning outgoing emergency trucks. Persons trapped in elevators were released and treated for shock. Needed equipment included floodlights, flashlights, safety torches, flares, oil lanterns, gasoline-air lanterns and portable generators. At the fire, Burrell M. S. A. gas masks were used against the fumes, and we have two of these on every piece of apparatus, a total of 112.

Portable Electric Power Invaluable

When the regular electric power ceases to be, the value of portable electric generating sets can hardly be overstated. Newark's emergency equipment included two Homelite generators of 1¼-kw capacity, and we have ordered two more of the same kind. Here are four of the emergency runs illustrating their use:

4:28 P. M.—To Newark Post Office. Set up portable electric generator and two floodlights.

5:00 P. M.—To Public Service power plant at Point No Point. Set up portable generator and two floodlights and



THE AKRON VAPOR NOZZLE THAT PUT OUT THE FIRE

assisted Fire Department by supplying CO_2 fire extinguishers to combat the fire.

5:40 P. M.—To Public Service plant with additional generator and floodlights.

6:40 P. M.—Jersey City Emergency Squad sent to Newark Airport and set up portable generator and floodlights to illuminate smokestacks and other high projections.

On ten of the 19 emergency runs made by the Newark and Jersey City trucks, gasoline air lamps were the equipment furnished. We owned 12 of these and have now ordered many more from the American Gas Machine Co. They burn 10-12 hours at a cost of 5 cents. Because of the great demand all over the city for lights and electrical energy, cut off for 5½ hours, the supply of lighting devices became exhausted, necessitating our sending a request for additional lights to the Jersey City Emergency Division, which responded at once and made three runs for us.

The Fire

The cause of all the trouble was the failure of a bushing or some other part in a 13,000-volt selector oil circuit breaker between the high-tension lines from Kearny station and the busbar. There are 105 such circuit breakers in the Essex plant. The fire was on the fifth floor, and fumes from the burning oil penetrated to the sixth floor and deposited a heavy soot or carbon coating on the busbars, causing short circuits and shutdown.

Because of the potential danger to the firemen and to the high-powered lines and equipment, it was impossible for the Department to use hose streams. The fire was extinguished by a new Akron water vapor nozzle attached to fourteen lengths of 2½-inch hose from Engine No. 16 connected to a low-pressure hydrant about 500 feet south of the building, with 175 pounds of pressure at the engine. Men were stationed 15 to 20 feet apart along the line to watch for leakage or a possible break. Then the vapor was applied in five shots of ten seconds each, and the fire was put out in less than a minute. This was at 6:30 P. M.

There was of course much cleaning and repairing to be done by the power-station attendants. The Airport lights went on at 8:45; service in the business section was available at 9:00, and all service was normal at 11:37 P. M. We have ordered fourteen more of these vapor nozzles and will equip every ladder truck and chemical company with them.

International Conferences on Municipal Government and Housing and Town Planning in Paris, July 4-12

UNDER the high patronage of the French Government four important international organizations will hold a joint Congress in Paris from July 4 to 13, 1937. These are the International Federation for Housing and Town Planning (of London), International Union of Local Authorities (of Brussels), International Housing Association (of Frankfort), and Institute of Administrative Sciences (Brussels).

Among the principal subjects for discussion by the various groups will be:

National and Regional Planning
Urban Legislation
Abatement of Air Pollution by Smoke, Gas and Dust
Renting and Financing of Dwellings
Height and Area of Dwellings
Milk Control
Methods for Collaboration Among and Coordination of International Associations

The headquarters of the joint Congress will be at the Maison de la Chimie (Berthelot Foundation), Rue St. Dominique, Paris.

Delegates will have ample opportunity to visit the great exhibition, "Art et Technique dans la Vie Moderne," held in the center of Paris this year, which will illustrate the most recent advances in architecture, town planning, transport, entertainment, sanitation, and the various crafts employed in the production of those things for which modern civilization has need.

It is proposed to arrange, in connection with the Congress, certain excursions in the neighborhood of Paris and two simultaneous study tours, commencing on July 12, to enable delegates to study the progress in housing and town planning in other parts of the country. There will also be a number of official receptions.

Further details are obtainable from Clifford W. Ham, executive director of the American Municipal Association (850 East 58th Street, Chicago, who is serving as secretary of the American Committee.

Modern Office Appliances

THE installation a few years ago of the photostatic copying of legal documents in the office of the County Clerk has resulted in money-saving and perfect duplication.

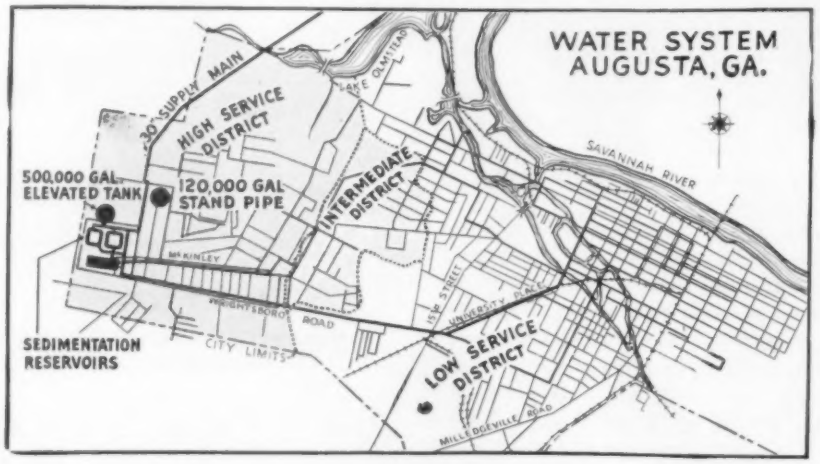
There are other departments in the county where typists repeat month after month the writing of the same series of names on payrolls, checks, and envelopes, when the use of the addressograph would obtain both rapidity and accuracy, both of which are now to be had approximately, and only at the high cost of an unnecessarily large labor force and much typewriter equipment. The whole cost of the addressograph equipment would be saved many times over in one year.

If county departments are to be operated chiefly to give positions to their employees no change should be made from antiquated office methods—the more typists, the more positions to fill. Otherwise, here is an opportunity to save some thousands of dollars annually in the departments charged with the handling of child welfare, old age security, and other repeating disbursements where the change is applicable to their needs.

—Buffalo Municipal Research Bureau.

Gravity Pressure to High District with New Steel Tank

Repumping Necessary for Only a Small Section of Augusta, Ga.



THE city of Augusta is fortunately located as regards its water supply and distribution. In the first place, the Savannah River, to the north, provides an adequate source, and, second, the topography of the twelve square miles of the city slopes to the southeast, making it possible to serve most of the distribution system by gravity without re-pumping.

A masonry dam seven miles above the city diverts a portion of the flow of the Savannah River into the Augusta Canal, which runs parallel to the river for some distance. The main pumping plant in the water-works system is located between the river and the canal, three miles north of the city. It contains two 6-mgd duplex pumps driven by water wheels, one 4-mgd steam-driven duplex unit, two 4.3-mgd and one 6-mgd electric-driven centrifugal pumps.

The raw water from the Augusta Canal is pumped 3½ miles through a 30-inch main to two open reservoirs with a total capacity of 120 million gallons on Monte Sano hill at the western edge of the city. A 10-mgd filter plant is located adjacent to the open reservoirs. The raw water flows from the reservoirs through the filter plant and into a 1.5-million-gallon clear-water basin by gravity.

Distribution System

The distribution system is divided into three districts. The low and intermediate districts are supplied by gravity from the clear-water basin. There are two supply mains from the clear-water basin to the low-service district, one a 24-inch main leading to the west and central portions of the business district, and the other a 20-inch line to the northwest part of the business district. An average pressure of 67 pounds per square inch is maintained throughout the district by means of regulating valves on the supply mains.

The intermediate district is supplied by an 8-inch branch from the 24-inch line which goes to the low-service district. The high-service district is a residential section on the high ground near the open reservoirs. It is supplied by a booster station at the filter plant consisting of two 1-mgd and two 2-mgd electrically driven pumps.

THE NEW 500,000-GALLON ELEVATED TANK OF COLONIAL DESIGN AT AUGUSTA

For some years the only storage facility in the high-service district has been a 120,000-gallon standpipe 100 feet high. The effective capacity of this standpipe became inadequate owing to the rapid growth of the residential section, so that a 500,000-gallon elevated tank of colonial architecture has been erected adjacent to the sedimentation reservoirs to serve this district.

The new colonial tank has tubular columns, a radial cone bottom and an ellipsoidal roof. The height from the ground to the bottom is 66 feet 2 inches, and the range in head is only 24 feet 10 inches to the high-water line. The tank is located on one of the regular air lines, which accounts for the shell's being painted orange and white in alternate blocks according to Department of Commerce regulations. Without this checkerboard effect, the tank would blend more harmoniously with the surrounding terrain.

The water works of Augusta is under the direction of E. E. Pund, City Engineer and Commissioner of Public Works. M. B. Cooper is Superintendent of the canal and water works. The new 500,000-gallon colonial tank was erected by the Chicago Bridge and Iron Company.

Refuse Collection Costs in Columbus, Ohio

Fleet of 1½-Ton Trucks Help Reduce Charges

SAVINGS in garbage collection costs running in excess of 64 cents a ton in labor, gas and oil required and an increase of 25 per cent in the amount of rubbish collected daily, with a 50 per cent reduction in gasoline consumption, have resulted from the introduction of new light-weight trucks to replace heavy tractor and crane equipment in Columbus, Ohio, according to Harry J. Reynolds, Superintendent, Division of Street Cleaning and Refuse Collection. The new collection fleet consists of fifteen Ford V-8 1½-ton trucks, five of which have 5½-cubic-yard open-top dump bodies for street cleaning and rubbish collection, five others have 6-cubic-yard tarpaulin-covered garbage trucks. This equipment replaces ten of the heavy-duty trains, each of which was made up of a 5-ton truck-tractor and four 5-cubic-yard side-dump trailers.

While designated as 6-cubic-yard bodies, both the tarpaulin-covered and the steel-type garbage bodies of the new fleet actually have a 9-cubic-yard capacity, because the end gates and sides are constructed to provide a 3-cubic-yard capacity in the crown. The bodies have a 4-cubic-yard base capacity to the top of the rigid side panels, plus 2 additional cubic yards provided for by hinged steel sides, and the 3-cubic-yard capacity provided by the 30-inch tail-gate and sloping covers. The tarpaulin-covered units are designed for use on either garbage or rubbish collection, so that they can be used for garbage collection in the peak summer months and subsequently for ash and rubbish collections in winter when rubbish volume normally increases at the same time that garbage volume is reduced.

The bodies of the trucks have a 58-inch loading height to the top of the hinged steel sides for the 6-cubic-yard capacity. This is a slight improvement on the 60-inch loading height of the 5-cubic-yard side-dumping trailers previously used. The reduction in height is secured through mounting the body on a 5-inch sill so that the floor of the body is only 6 inches from the top of the truck frame, and through the use of a vertical type hoist mounted down in the frame. This hoist also gives the body a 55-degree dumping angle. The bodies are 11 feet long and are mounted on a 157-inch chassis.

Garbage collection costs with the new light-weight fleet are running from $1.46 to $1.64 per ton, contrasting with

ONE OF THE FIFTEEN NEW 1½-TON GARBAGE TRUCKS OF 9 CUBIC YARDS CAPACITY RECENTLY PLACED IN SERVICE IN COLUMBUS, OHIO

a minimum cost of $2.28 a ton with the heavier equipment, according to Mr. Reynolds. Costs on the older equipment sometimes were as high as $3.18 per ton.

At present ten of the trucks are being used for garbage collection, replacing eight trains. Each crew now consists of one driver and two loaders instead of a driver, a brakeman, and three loaders who accompanied the train units. Garbage is collected from 79,770 cans, aggregating about 21,472 tons of mixed wrapped and slop garbage per year. The maximum collections during the peak season are about 175 tons per day.

Rubbish Collection

On rubbish collection, the light-weight units are also proving more economical than the heavier equipment. Previously, two trailer-trains with a crew of two drivers, a brakeman and six loaders, were assigned to this work. The two trains have been replaced by 3 Ford V-8 units, with a crew of three drivers and six loaders, thus requiring the same number of men. The lighter units, however, because of increased speed and maneuverability, have increased the daily yardage from an average of 100 cubic yards a day to around 130 cubic yards per day. At the same time average gasoline consumption has been reduced to 12 gallons per day, compared to 30 gallons per day for the trailer units. The increase in yardage collected is attributed to the speed with which the units can be moved to the dump and back, and to the ease of handling in narrow alleys.

Mr. Reynolds also reports a reduction in accidents to crew members and in damage claims from property owners, with the new equipment. While more time will be required to obtain statistics on an annual basis, the increased ease of handling the small units apparently will effect a considerable reduction in this expense.

A Plea for Wrapped Garbage

When the new collection fleet was put into service, Mr. Reynolds had "sticker" notices placed on all cans telling householders of the new garbage and rubbish container regulations. Heretofore, a crew of 16 canvassers made house-to-house calls, endeavoring to increase the percentage of wrapped garbage. With the use of the "stickers" on the garbage containers, the percentage of wrapped garbage compared to the total volume collected has been increased 100 per cent. Of the total collected, approximately 70 per cent is now wrapped. Although the wrapped garbage bulks larger than unwrapped garbage, making more cubic yards per ton, the increase in collection cost resulting from wrapping is more than offset by the decrease in incineration costs because of the fuel value of the paper used to wrap. Formerly, about one ton of coal was required to each five tons of garbage incinerated. With the higher percentage of wrapped garbage, one ton of coal is now sufficient for 15 tons of garbage.

The bodies for the 15 Ford V-8 trucks were supplied by the Truck Engineering Corporation, Cleveland and Columbus, Ohio, and were mounted, with the dumping equipment, by Gar Wood Industries.

GUMMED ON BACK

Four Points You MUST Observe

1—DRAIN WELL and WRAP the garbage in SEVERAL THICKNESSES of heavy paper, such as newspapers and heavy wrapping paper.

2—After draining and wrapping place in a can that is covered so that rain and snow cannot get in to wet it. If placed in an open can and it becomes wet, it defeats the purpose of draining and wrapping.

3—Place ALL BURNABLE rubbish in the garbage can along with your garbage, or if impossible to get it all in the garbage can, place it in some other COVERED container so that it can be kept DRY, alongside of your garbage can, and it will be collected at the same time that we get your garbage.

4—NO ASHES, TIN CANS, BOTTLES or NON-BURNABLE rubbish will be taken with garbage, but will be collected just as soon as finances are available to make rubbish collections.

For further information call ADams 2423.

HARRY J. REYNOLDS, Superintendent,
Division Street Cleaning and Refuse Collection

THIS "STICKER" CALLED THE ATTENTION OF THE HOUSEHOLDER TO THE PROGRAM OF WRAPPING GARBAGE FOR COLLECTION

THOSE WHO FAILED TO WRAP GARBAGE FOUND THIS ON THEIR CONTAINERS, REQUESTING THEIR COOPERATION AND POINTING OUT THE ADVANTAGES

GUMMED ON BACK

We REGRET that you have FAILED

To DRAIN and WRAP your garbage in SEVERAL THICKNESSES of HEAVY paper, such as newspapers or heavy wrapping paper, as we previously requested. DO NOT use just a single thickness paper bag.

Your GARBAGE CAN will NOT RUST as quickly, WILL LAST LONGER and be more SANITARY if you do this.

After draining and wrapping, place it in a can that IS COVERED so that it will not become wet.

Place ALL BURNABLE rubbish you have in with the garbage, or if it is impossible to get it all in the one can, place the burnable rubbish in a separate COVERED box or container so that it will be kept DRY and we will collect it along with the garbage.

NO ASHES, TIN CANS, BOTTLES OR NON-BURNABLE rubbish should be put in with the garbage.

Your cooperation in this matter will be greatly appreciated. Thank you.

For further information call ADams 2423.

HARRY J. REYNOLDS, Superintendent,
Division of Street Cleaning and Refuse Collection

Toronto's Municipal Asphalt Plant and Patching Practice

A Well-Conceived Plant, and Well-Organized Street Maintenance

THE first municipal asphalt plant in Toronto, capital city of the Province of Ontario, was built in 1907 and has since been reconstructed to increase its capacity and improve the economy of its operation. The plant is located close to the lake front in the heart of the manufacturing district. Surrounding it is a municipal yard for the storage and servicing of other street equipment.

Commercial aggregates are purchased in the open market and delivered by railway cars and trucks to stockpiles in the municipal yard. Asphalt is purchased by contract and delivered by tank car, heated on the siding at the plant and pumped to two 100-ton storage tanks, adjacent to which is a horizontal tank of 10,000 Imperial gallons capacity for the storage of fuel oil for the asphalt plant drier and other uses.

The aggregate is moved from the stockpiles to the top of a concrete tunnel by a 50-ton crane with a 1-yard clamshell bucket. An 18-inch belt conveyor runs the length of the tunnel, and aggregate is delivered to it through three gates for stone at the south end, or far end from the drier, and through three gates for sand. The belts are in duplicate to insure operation in case of breakdown at a time when high production is necessary. The two belt conveyors deliver to the boots of two bucket elevators that carry the cold material to the oil-fired driers, which are 48 inches in diameter and 20 feet long. The fuel oil is atomized with steam injectors.

From the driers the hot aggregates are delivered by a pair of 45-foot bucket elevators to any one of the three 15-ton storage bins. One outer bin is screened and will separate sand from stone. The others are not screened but can be used for sand or stone as desired. The screen does not size the aggregates. Cyclone-type dust collectors over the top of hot elevators and screens collect the fine dust.

There are two steam-jacketed and steam-operated asphalt pumps, one in the boiler room and a spare outside. These pumps deliver the asphalt from the storage tanks, where it is heated by steam coils, through a steam-jacketed asphalt line and nozzle to the weigh-bucket attached to beam scales above the pug-mill mixer. The flow of asphalt is controlled by a stop cock with a long lever so that the operator is far enough away from the nozzle to prevent burning from the hot asphalt. Little splashing is experienced, as evidenced by an almost complete absence of asphalt outside the weigh-bucket.

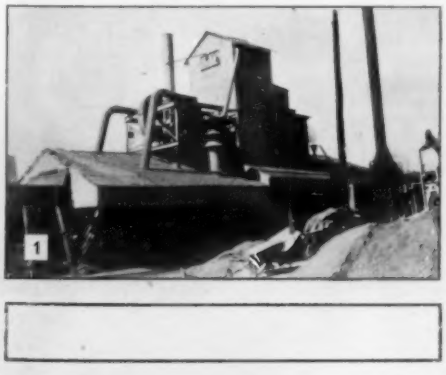
The aggregates are drawn from the three bins and from a separate limestone dust-bin, from which they are carried by a screw conveyor to the weigh-box. Beam scales are used entirely for weighing the aggregates. The various asphalt batches are made up in 2,000-pound lots, the capacity of the pug-mill. A steam piston is used to dump the batch.

The power equipment at the plant consists of a 100-horsepower coal-fired steam boiler, which supplies all steam for use in the plant, a 100-horsepower electric motor with a 16-inch leather belt main drive, and a steam engine standby for operating the plant.

The plant is operated 8 hours per day, and the maximum output of asphalt material, mixed 1½ minutes in the pug-mill, has been 100 3-ton loads in one day.

Street Repairs by the Burner Method

The city has quite successfully made its own burners, with 6 x 6-foot hoods and equipped with three flames on either side. On one burn, which usually lasts about 1½



ASPHALT STREET REPAIRS IN TORONTO, ONTARIO

1. The municipal asphalt plant. 2. One of the surface heaters or "burners" for softening pavement which is to be repaired. 3. A section cut out, ready to be resurfaced with hot material from the asphalt plant. Note clean cut at edge of adjacent patch to the right

HOW TRUCKS RUSHED FOOD TO STRICKEN FLOOD AREA

. . . Trucks Loaded in Double-Quick Time . . .

By LOWELL THOMAS

"Famine threatened. Flood-made lakes covered homes, stores, restaurants. Hundreds of thousands of homeless fled the mad Ohio River. By phone, wire and radio came frantic appeals for aid.

"To supply food to dozens of Indiana, Ohio and Kentucky cities the Chas. Sucher Packing Company of Dayton kept its fleet of 34 trucks running 24 hours a day. It was load up and drive, load up and drive with not a minute to waste. Through driving rainstorms and blinding sleet the trucks fought their way. Tires found a footing on roads half washed away. There was a terrific strain on driver, truck and tires. "Believe me, it's in times such as this when human lives are at stake that freedom from tire trouble is really appreciated." These trucks all roll on Goodrich Triple Protected Silvertowns. And Silvertowns carried them through the emergency without a single tire delay.

* * *

Lowell Thomas's story is typical of truckers' experience with Goodrich Silvertowns. For the big loads, on the hard hauls,

. . . Ten Tons of Meat Ready to Roll . . .

where minutes count—you usually find Silvertowns. It's because of a special construction—Triple Protection—that checks 80% of all premature failures. This development means greater freedom from side-wall breaks and blow-outs, increased mileage, lower repair bills. Money saved.

Here's why. All Silvertowns for trucks have this extra protection built into the heart of the tire:

1 **PLYFLEX**—distributes stresses throughout the tire—prevents ply separation—checks local weakness.

2 **PLY-LOCK**—protects the tire from breaks caused by short plies tearing loose above the bead.

3 **100% FULL-FLOATING CORD**—eliminates cross cords from *all* plies—reduces heat in the tire 12%.

NO EXTRA COST

There's the tire you should have for *your* trucks—whether you haul lumber, dirt, laundry or milk. It will save you real money. Naturally, it costs more to build a tire with Triple Protection. But it costs you nothing extra. Ask any Goodrich dealer for prices.

Read What Mr. Sucher Says

Charles F. Sucher, President of the Chas. Sucher Packing Co., says, "We find that Triple Protection does everything that is claimed for it. We have not had a single premature failure with Goodrich Silvertowns. For nine months our total tire repair bill for 34 trucks was only $65.75."

Goodrich *Triple Protected* **Silvertowns**

SPECIFY THESE NEW SILVERTOWN TIRES FOR TRUCKS AND BUSES

minutes to permit the heat to penetrate about 1 inch, an area 7 x 7 feet is heated sufficiently to rake off the old material. Some of this surface material is not wasted, but is hauled to city yards for paving purposes.

Each surface heater carries two oil tanks of 20 gallons capacity. The oil is poured into the first tank, and then a hand pressure pump moves it to the second, where an 80-pound pressure is maintained by an air pump. The oil is carried to each of the six burners through outside piping and a coil inside the burner, where the oil is vaporized by the heat beneath the hood. The hood is carried on two wheels at the rear, which also support the fuel tanks, and on two skids or shoes at the front corners that hold it about 3 inches above the pavement, which gives the best results in combustion of the oil and in softening the pavement.

A regular repair crew consists of thirteen men and a foreman. The operating crew consists of a roller man, one man sweeping up and moving the barricades, one man operating the burner, two men scraping the "burned" material, one man wheeling away the burned material, one man cutting joints, one man sweeping joints, one man shoveling the hot mix from the trucks into the patches, two men raking on the patches, and two tamping.

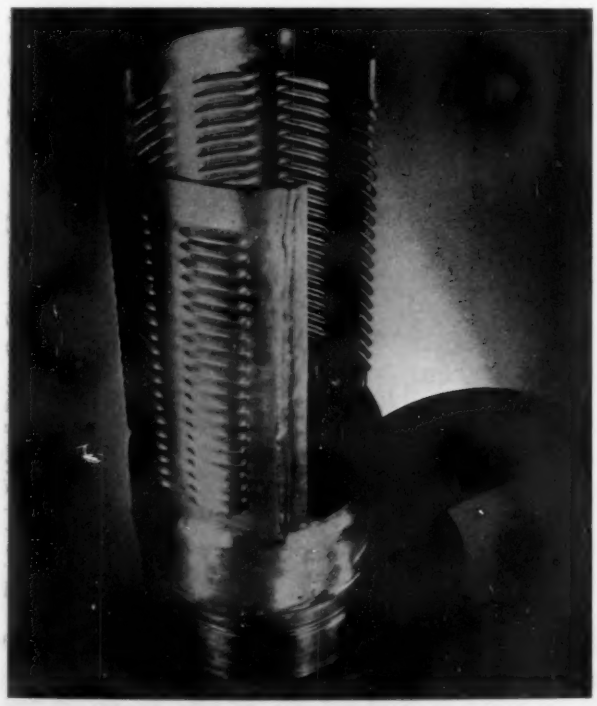
All edges of patches are cut square and are painted with hot asphalt by the tamping men, using the same asphalt that is used in the mix. Triangular scrapers are used for removing the burned material, and as each man reaches the bottom of the material, he makes three scores to key the new patching material to the old base. The edges are hand-tamped and the smoothing irons are not used at the edges, or at all on work in Toronto, even though a pair of smoothing irons is carried by each gang in its oil-burner-heated fire wagon. Longitudinal rolling and angle rolling are used to compact and bond the patching.

Deep-Well Problems

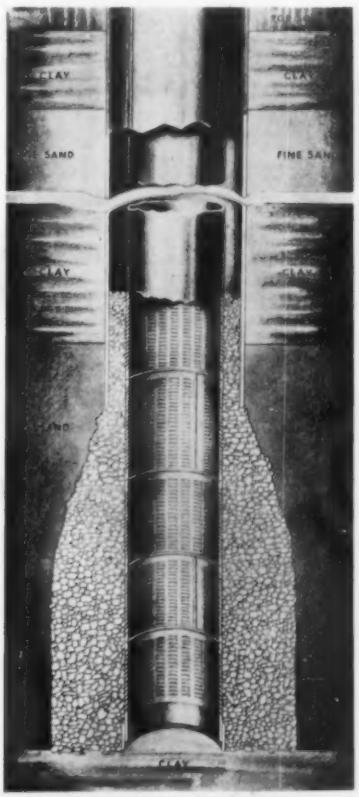
Dyersburg, Tennessee, Solves Corrosion of Screens

WHERE river or lake waters, that is, surface waters, are not available or are polluted, municipalities depend on deep wells as sources of water supply. Test wells are sunk to determine the best location, and then a large-diameter casing is sunk to the water-bearing strata. When this is done, an outer casing, usually from 2 to 3 feet in diameter, and sometimes larger, is sunk, as shown in the diagram, to a point somewhat above the top of the water stratum or strata.

After this, an inner casing is sunk to about the same level as the outer casing, and an intake shutter screen is extended to the full depth of the water-bearing formation. To prevent fine sand from clogging the screen, a layer of specially selected gravel is fed down between the inner and outer casing and around the screen.

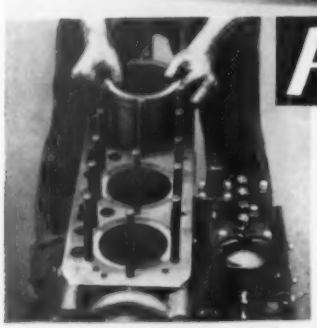


SECTIONAL VIEW OF SHUTTER-TYPE MONEL WELL SCREEN



CROSS-SECTION OF A GRAVEL-WALL WELL, SHOWING THE COARSE FILTER MEDIUM PLACED AROUND THE WELL SCREEN TO INCREASE THE EFFECTIVE SCREENING AREA

America's FIRST Diesel-Powered Industrial Wheel Tractor . . . the new INTERNATIONAL ID-40



Replaceable cylinders—an example of the big money-saving features built into all International Tractors.

The Model ID-40 is as easy to crank as a gasoline tractor of corresponding size.

Power, Quality and Economy

● International Harvester, world's largest tractor builder, scores another *first* with the new Model ID-40. This organization has adapted the Diesel principle to wheel-type industrial tractor operation, the first time this has been done in America. This new tractor uses the same International Diesel engine that has proved so successful in the International TD-40 TracTracTor and the Model PD-40 Power Unit. The Model ID-40 Tractor has power and stamina to handle a variety of heavy-duty work calling for a wheel tractor. Investigate this new addition to the line of International Industrial Power, which includes wheel and crawler tractors, and power units from 12 to more than 100 h. p.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL Model I-40
This tractor is also new in the International Industrial Power line. It is similar in design and construction to the Model ID-40 but is powered with the efficient 6-cylinder gasoline engine used in the Model T-40 TracTracTor. Both of these tractors have the well-known features of International manufacture which mean so much to the user in low operating costs and maintenance economy.

INTERNATIONAL HARVESTER

The life of the shutter screen itself depends upon the careful choice of screen material; it must have good resistance to the particular corrosive elements found in individual hydrological areas; it must also be capable of fabrication in conformance with the manufacturers' regular shop procedure; and be strong and rigid enough to withstand the pressure of gravel and surrounding materials against its side-walls.

In fabricating the screens, no metal is removed, merely a horizontal slit is made, and the metal bent outward, forming an arch. The rows of arches are staggered for greater strength and efficiency of screening. Since the gravel wall filters out practically all fine sand, the louvres are much larger than in the case of ordinary screens.

To withstand corrosive water conditions and to insure trouble-free operation for many years, Monel metal has been used on many screens, since it offers the requisite strength and ease of fabrication, combined with resistance to corrosion by both hard and soft water. Dyersburg, Tenn., specified Monel metal shutter screens for its deep wells in 1930. Previously, Dyersburg had experienced trouble because the wells did not reach strata where the available supplies of water were constant, and because the screens corroded and clogged. New wells were dug and the new metal installed. Since then the water supply has been satisfactory, and, because of lessened maintenance expenses, the town is showing an annual profit of $80,000 on its municipal water system. The new wells were constructed by Layne & Bowler, Inc., Memphis, Tennessee.

Plant-Mixed Low-Cost Pavements

Methods and Specifications from Lansing, Mich.

THE dust nuisance has done more to develop the low-cost pavement than any other factor except cost. The city of Lansing, Mich., has been using the plant-mix method of low-cost pavement construction with very good results for the past five years, using an asphaltic oil. No street is paved with this plant mix unless it has a well-compacted gravel surface 6 inches thick. Nine tests for thickness of the gravel are made in each block, and if one or two tests show a thickness of gravel of less than 4 inches, the street is rebuilt. Before applying the plant-mix material, the street is excavated to grade and contour to a depth of 2½ inches below the gutters, and then rolled with a 10-ton wheeled roller.

Materials

The aggregate for the plant-mix is obtained from a city-owned gravel-pit and is charged to the job at $1.00 per cubic yard. Ten-mesh sand silica dust is added to the bank-run material in order to bring the grading within the specified limits. Five per cent of silica dust is added to the pit material, which, along with the 2 per cent of 200-mesh material in the pit aggregate, gives an average of 7 per cent of 200-mesh material.

The specification for the asphaltic oil is as follows:

100 penetration asphalt content	72-80%
Ductility of asphalt content @ 77° not less than	100
Specific gravity @ 60° not less than	1.02
Soluble in carbon disulphide, not less than	99.0%
Flash point (open cut) °F., not less than	225°
Distillation test, per cent by volume	
Total distillate to 437° F., not more than	2%
Total distillate to 600° F., not more than	10%
Total distillate to 680° F., not more than	20%
Furol viscosity, seconds @ 122° F.	350—850
Furol viscosity, seconds @ 140° F.	150—300

The grading of the plant-mix is closely watched to keep it within the following limits:

Passing 1" screen, circular openings	100%
Passing ¼" screen	50 to 80%
Passing 10-mesh screen	35 to 70%
Passing 200-mesh screen	5 to 15%
Asphaltic road oil	5%

All materials are separately weighed, and mixed in the same manner as a sheet asphalt mixture. The asphaltic oil is heated to 160 degrees F., and the gravel is heated in a revolving dryer to remove the moisture content to less than 1 per cent.

Placing the Plant-Mix

The plant-mixed material is hauled to the street to be paved in trucks, dumped on the prepared subgrade, and leveled with power graders to a uniform thickness of 3 inches. When cool, the mixture is rolled with a 10-ton tandem roller. The street is thereafter rolled once a day for three or four successive days during the cool part of the day.

Cost

Equipment rental is charged to the project according to Michigan State Highway rates. The costs of materials going into the plant-mix are: gravel, $1.00 per cubic yard at mixing plant; silica dust, $5.25 per tons; asphaltic oil, 4.93 cents per gallon. Common labor is paid 62.5 cents per hour, and skilled labor in proportion. The cost of the completed pavement for the 230,000 square yards built in 1935 was 32.5 cents per square yard.

Maintenance

Maintenance of these streets during the past five years has been negligible; however, the streets are given a seal coat during the fourth year. Owing to raveling along the edges, no streets are paved unless they have curbs, or curbs and gutters.

Sam Jacka, City Engineer of Lansing, reports that the pavements are proving very satisfactory, and recommends them highly for residential streets. The estimated life of these low-cost plant-mix pavements is from fifteen to twenty years, providing a seal coat is applied every four or five years.

ACKNOWLEDGMENT.—From a paper by GEORGE H. SANDENBURGH, City Engineer, Ann Arbor, Mich., presented before the 1936 Public Works Congress in Toronto.

"We Must Have Cleaner, More Sanitary Streets"!

. . . said the Mayor

"Our citizenry is up in arms. Merchants, business interests, civic organizations, women's clubs . . . especially housewives . . . are *demanding* cleaner, more sanitary and healthful streets."

"They say that our streets are a bad 'advertisement' to visitors . . . a hazard to traffic . . . and a menace to the health of our citizens and children."

"I have investigated the street cleaning methods of other communities of the same size and population as ours. Invariably, I find they all use street *flushers* . . . they really *wash* their streets 'spotless clean' with 'nature's greatest cleaner' . . . *water!*"

"Initial costs of flushers, compared to other street cleaning equipment, are less, I understand. Maintenance costs, especially, are practically nil. A distinct advantage is that flushers clean entire width of street in *one* trip . . . also, flushers will clean UNDER PARKED CARS at curb.

I recommend that we buy street flushers now."

Thanks, Mr. Mayor! Right you are in mentioning some of the advantages and economies of street-cleaning by flushing. The New Etnyre, Power-Pressure Street Flushers are illustrated and described in Catalog No. 304. Copies gladly sent upon request. It will pay you to investigate the advantages and economies of Etnyre Flushers now. E. D. Etnyre & Co., Oregon, Ill. Sales offices, Boston and New York.

Etnyre Street-Flushers can be mounted on any truck or trailer chassis

Flushing Costs Less . . . Washes Streets Cleaner

New Small Filtration Plant Gives Complete Treatment

St. Elmo, Ill., Installs New Water Works as a PWA Project

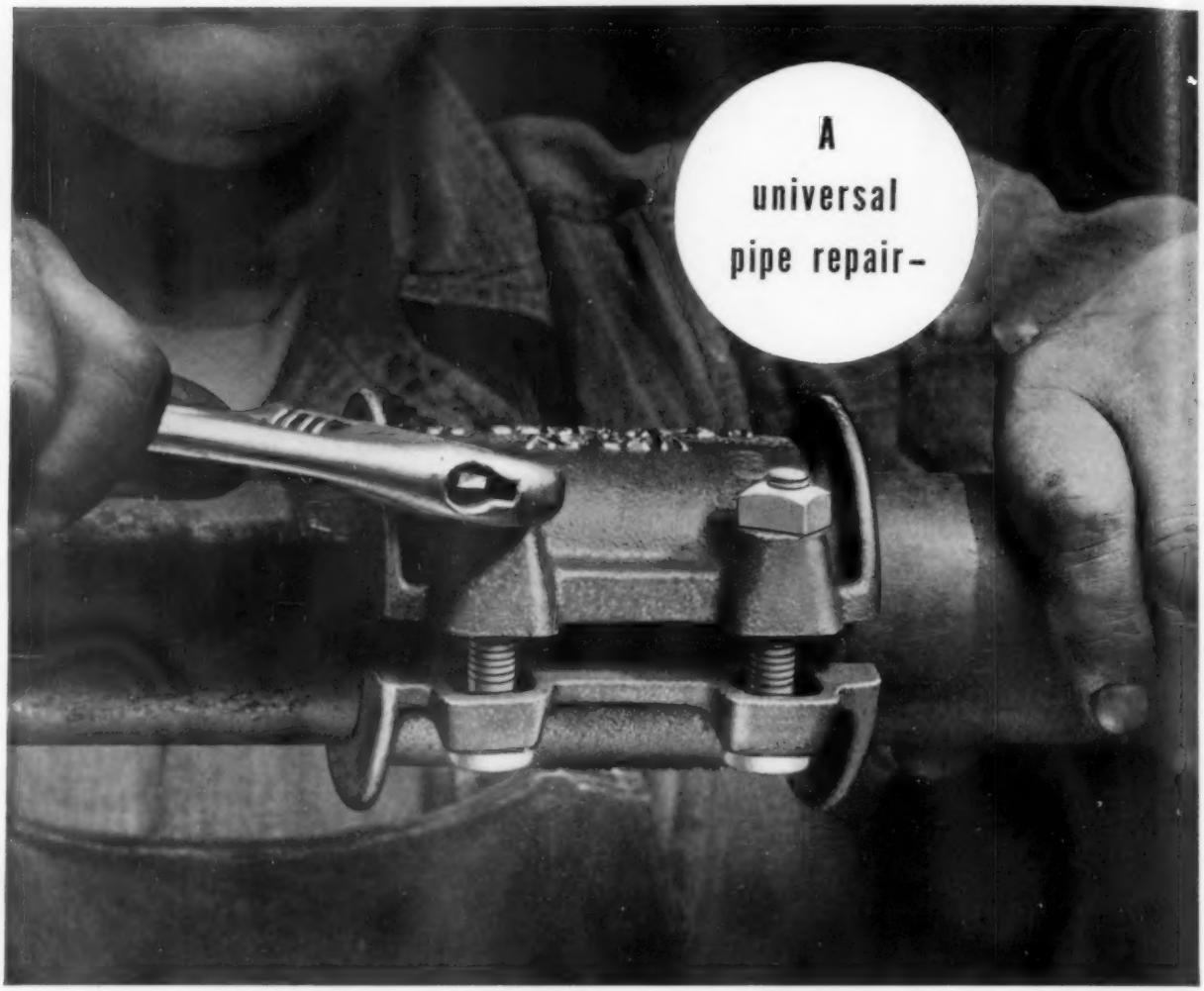
WATER first ran through the new rapid sand filtration plant at St. Elmo, Ill., on August 22, 1935. The impounding reservoir was first built in 1900, and the raw-water pumping plant that has been serving the city for 33 years was placed in operation in 1903. The water delivered to the city was not always free from turbidity, and at times was unfit for domestic use. In fact, when the new filtration plant was started, the mains were flushed for several days to clear out the deposits of mud that had accumulated.

The old impounding reservoir had a storage capacity of 21,000,000 gallons, which was inadequate for a city of 1,300 people, the size of St. Elmo. The spillway of the old dam as well as the dam itself had been badly damaged by overtopping floods and wave action. Under the new improvement the reservoir was enlarged, the dam strengthened, and the spillway rebuilt. Owing to the flat character of the lands surrounding the reservoir site, it was impractical to raise the height of the dam. The reservoir storage was therefore increased to 36,000,000 gallons by the use of wood flash-board gates set in the new spillway crest, which raised the water level 24 inches. The spillway was widened from a 30-foot width to a 60-foot width to provide ample protection against flood waters, estimated at a maximum, once in 40 years, of 3,000 second-feet from a watershed of 3 square miles. The inner slope of the dam was protected from wave action by riprap, and the dam was strengthened by placing additional fill, so that the new dam now has a top width of 5 feet and slopes of 2:1 on the downstream and 3:1 on the upstream side.

An 8-inch cast iron line delivers the raw water from the reservoir intake to the filter building, located approximately 150 feet west of the dam, where it first receives prechlorination at the rate of 0.3 ppm. A pair of 4-inch Goulds centrifugal pumps lift the water from the 8-inch line to the treatment flume on the floor above. One of these 225-gpm pumps is used at a time, with the other as a standby. Mounted on the treatment flume are three Infilco dry feed chemical machines, one for alum, one for lime and the third for Nuchar. The flume is a semi-circular section 2 feet deep, 2 feet wide and 7 feet long, and leads to the mechanical pre-mixer. The alum and Nuchar are added with water in the treatment flume, while the milk of lime is run through a pipe and hose to the line between the filters and the clear well, and is used solely to maintain the proper pH value. Lime may also be fed into the treatment flume if desired.

The pre-mixer is in a chamber 5 feet long, 2 feet wide and 3 feet 6 inches deep, and revolves with a paddle speed of 300 feet per minute to thoroughly mix the chemicals with the water before it enters the Infilco Super-Mix. The mixer itself consists of two sets of rotating vanes, one above the other, each vane consisting of 6 x 18 x 1-inch planks. The normal paddle speed is 75 feet per minute, while an added sprocket on the drive mechanism permits 0.7 of normal speed if required. The chamber is 6 x 13 x 10 feet deep and provides a 23-minute retention period for mixing. A 6-inch valve at the entrance to the mixing chamber makes it possible to by-pass the mixing and sedimentation chambers completely and put the water direct-

THE ST. ELMO WATER WORKS, SHOWING THE FILTER BUILDING AND SETTLING BASIN AND THE CIRCULAR CLEAR-WATER WELL



EMERGENCY PIPE CLAMP

40 years of satisfactory use make this sturdy clamp the standard of the industry. For stopping leaks in pipe lines, instantly and permanently. Quickly, easily applied by anyone, with a small wrench . . . for steel or cast iron pipe sizes ½″ to 12″ . . . no pressure too high. Absolutely permanent. Saves cost of new pipe, extra labor, shutdowns.

Also available in double lengths for long splits or very bad corrosion. Listed as SKINNER PIPE LINE CLAMP. For pipe sizes ¾″ to 7″ O.D.

Made of malleable iron, enamelled to resist rust, and equipped with large cadmium plated steel bolts and rubber gasket. Note raised lugs for wrench convenience. Write for complete Skinner catalog.

M. B. SKINNER CO. *Est. 1898* SOUTH BEND, IND.

ly on the filters. The sedimentation chamber is one basin immediately adjacent to the filter building on the south and measures 22 x 33 x 12 feet deep, with a center wall extending to within 10 feet of the far end from the filter building. This gives a 3½-hour settling period without any chance of short-circuiting in the basin. There is no second sedimentation chamber which could be cut out for cleaning while the plant is continued in operation. However, the by-pass feature described above permits the filtering of water at times when the settling basin is cut out of service.

Filters

There are two rapid sand filters, each 6 x 11 x 9 feet deep, built with Transite pipe manifolds and the same material for the laterals. The manifolds are 8-inch and the laterals 2-inch diameter, with brass nozzles in the top of the manifolds and all around the laterals. The holes are ¼-inch and spaced 2 inches on centers. Wagner underdrain blocks with slots are placed between each pair of laterals and stand 4½ inches high.

Seven layers of graded gravel with a total depth of 22 inches are placed over the underdrains, with 30 inches of sand on top. The tops of the metal wash-water troughs are 2 feet from the top of the sand. Wash water at 900 gpm is furnished from the clear well by a Goulds 6-inch centrifugal pump. The water from the filters flows through an 8-inch cast iron pipe to the clear well and is chlorinated on the way at the rate of 0.2 to 0.3 ppm. The clear well has a capacity of 90,000 gallons and is 14 feet 6 inches deep and 34.0 feet in diameter.

High-Pressure Pumps

The filtration plant is connected with the elevated steel storage tank in the center of the city by 3,600 feet of 8-inch cast iron pipe and 1,680 feet of 6-inch pipe. The line is connected to the gridiron system at several points. The elevated tank has an 8-inch riser and a capacity of 60,000 gallons. It is 24 feet deep and 22 feet in diameter, and the bottom of the tank is 110 feet above the elevation of the ground.

The pumping equipment for service to town consists of the old unit that was used in the earlier pumping station, a 2½-inch American centrifugal pump with a Western Electric motor and a new Goulds 6 x 8-inch turbine pump driven by a Waukesha 6-cylinder gasoline engine. This unit is used for fire pumping and is turned over every day to be sure it is ready for emergency service. This pump is able to provide complete service to the city with the regular pump out of commission and electricity off.

An American pressure recorder installed at the tank gives readings at the plant so that pumping may be regulated properly.

Chemical Treatment

The reservoir was given two treatments with copper sulphate last summer to prevent overgrowths of algae; the first was 145 pounds, and the second 135 pounds, for the 36,000,000-gallon impounding reservoir. They were successful in keeping the water free from this source of taste and odor.

The average daily flow through the plant for the year is about 25,000 gallons, but the summer demand reaches 51,000 gallons. The water is treated with ½-grain per gallon of lime and a similar amount of alum in summer, while in winter the treatment is increased to 1½ grains of lime and 1 grain of alum. Activated carbon is applied whenever there is a trace or taste of odor in the water, and at the rate of 25 pounds per million gallons.

Alum and Nuchar are stored at the plant in a very small storage space to which trucks can deliver easily. Lime is hauled out from storage in the city as required.

Westinghouse motors are used throughout for power except where others are mentioned, and the plant is completely equipped with Iowa valves. The filtration plant and pump house combined are of face brick manufactured locally, and the inside walls are of tile manufactured in St. Louis.

The improvement was carried out as a PWA project at a cost of approximately $65,000. Of this amount, the filter plant cost approximately $20,000, the improvements to the dam $8,000, and addition to the existing distribution system $37,000. The plant was designed by the Beard Engineering Co. of St. Louis, Mo., Everett C. Meyers, Principal Assistant Engineer, and was built by C. J. Moritz, Inc., of Effingham, Ill. It is operated under the direction of Harry Lang, Mayor, by Harry Rule, Superintendent of Water Works.

A Mayor's Annual Message

(From the January, 1937, Issue of the *Memphis Municipal News*)

During the year 1936, the city government, in cooperation with the Federal Government, has endeavored to carry out the largest program of public improvements ever undertaken in Memphis.

As a result of this program, the city of Memphis today has the best streets, hospitals, parks, schools, and recreation centers in its history. Public health has gone forward, our Fire and Police Departments have been improved, our finances are in excellent condition, and we have a substantial balance in the city treasury.

We have fought the depression and have won the battle.

In 1937, we intend to continue our program. New streets will be completed, dangerous railroad crossings eliminated, schools and parks improved, and our splendid airport completed. Memphis will continue its plan of progress until we make our community the outstanding southern city.

We will not falter in our program of progressive, modern, efficient, and economical public service for the benefit of all of our citizens.

TVA cheap electricity—in spite of all obstacles thrown in our path—will soon become a reality, giving Memphis the greatest opportunity in our history.

As the year closes, I want to express personally my deep appreciation to the City Commission for their conscientious and loyal services, to the many Boards and Commissions who have served mostly without remuneration in the up-building of this city which is our home, and to the thousands of city employees who have worked diligently to make Memphis a better, safer, and healthier city in which to live.

Let us all consecrate ourselves to sincere public service in the year 1937.

Sincerely yours,

WATKINS OVERTON.

MOTORISTS APPRECIATE THE "TRACTIONIZED" SKID-SAFE SURFACE OF A TARVIA ROAD

Barrett

Tarvia

GOOD ROADS AT LOW COST

THE BARRETT COMPANY New York Chicago Birmingham St. Louis Detroit Buffalo Providence Lebanon Rochester Baltimore Minneapolis Cleveland Columbus Philadelphia Toledo Youngstown Syracuse Hartford Boston Milwaukee Cincinnati Bethlehem Portland, Me. Norwood, N. Y. In Canada: THE BARRETT COMPANY, LTD. Montreal Toronto Winnipeg Vancouver

Street-Car Tracks Are Coming Up

More Than 400 Miles Removed by WPA Projects

WITH the close of the year 1936, 441.1 miles of street-car tracks were removed from thoroughfares of municipalities throughout the country under a total of 224 track-removal projects operated by the Works Progress Administration. According to reports received from states where street-car track removal projects are in operation, an additional 182.0 miles are in process of removal. These mileage figures are based upon reports from all but three of the states—Mississippi, Rhode Island and Utah.

States reporting street-car track-removal projects completed or in operation are Alabama, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Vermont, Virginia, and West Virginia.

States reporting no street-car track-removal projects are Arizona, Delaware, Idaho, Maine, Nevada, New Mexico, North Carolina, North Dakota, South Carolina, South Dakota, Texas, Washington, Wyoming, and the District of Columbia.

Among the states reporting the greatest activity in street-car track-removals are Illinois, with 22 projects on which 59.1 miles of track have been removed and 42.8 miles are in the process of removal; Indiana, with 12 projects on which the removal of 10.3 miles of track has been completed and 4.9 miles is in process; Massachusetts, with 19 projects on which 12.1 miles have been removed and 0.5 miles remain to be removed; Michigan, with 15 projects on which 101.5 miles have been removed, including 42.9 miles of track removed and replaced with new or better salvaged rails and 46.6 miles to be removed; New York City, with 7 projects on which 47.6 miles have been removed and 21.9 miles are to be removed; New York State (other than New York City), with 16 projects on which 21.1 miles have been removed and 4.0 miles are being removed; Ohio, with 40 projects on which 37.1 miles have been removed and 2.3 miles are being removed; and Pennsylvania, with 28 projects on which 36.9 miles have been removed and 3.8 miles remain to be removed.

In most instances the removal of street-car tracks has been conducted as part of a project calling for the paving of the street or streets affected. Service over these tracks, in many cases, had been abandoned by the traction companies long before, while in other instances the trolley

A TYPICAL SRTEET-CAR TRACK REMOVAL PROJECT IN TULSA, OKLA.

From old tracks with cobble paving in place, through the removal of the cobbles, then the tracks, pouring the new base, then the top course, and finally traffic uses the new artery

WITHOUT Traffic DELAY

Two unskilled workers can lay Wamblu Simplified Safety Letters and Markers on the pavement of the busiest street intersections during the regular red intervals of signal lights—laying fifty feet of strip in less than one minute.

New double-gum adhesive, heavier canvas and deeper impregnation of special paint make it possible to guarantee these Wamblu products for four months—one month longer than formerly.

Why Wamblu!

1. Wamblu Markers have better visibility.
2. Wamblu Markers are laid without delaying traffic (Winter or Summer).
3. Wamblu Markers are made with special adhesives for each season of the year.
4. Wamblu Markers grow brighter under wear, and last for the entire traffic season, with no upkeep cost.
5. Wamblu Markers cost less, because they serve longer.
6. Wamblu Markers are laid with unskilled labor.
7. Wamblu Markers are guaranteed.

Wamblu Markers are furnished in 25-foot lengths, 6, 7 and 10-inch widths. Usual 30-inch white letters on black background. Larger or smaller sizes if desired; and any two color combination.

Write us for samples and prices.

WAMBLU CORPORATION

Factory & General Offices:
1378 East Ridge Road **Rochester, New York**

Mid-West Sales Representatives
Blatchford Corporation, Carter Blatchford, Pres.
Room 713, 80 E. Jackson St. **Chicago, Ill.**

Mark THE WAY WITH WAMBLU

service was being replaced by the operation of bus lines. Salvaged rails, in some instances, have been used for construction of tracks elsewhere, as is to be noted in the case of Michigan, specifically in the city of Detroit. (See footnotes with the accompanying table.)

A tabulation by states, giving street-car track mileage involved on WPA projects throughout the country, exclusive of Mississippi, Rhode Island and Utah, from which (as noted above) no reports have been received, follows:

SUMMARY OF ACCOMPLISHMENT ON WPA STREET-CAR TRACK-REMOVAL PROJECTS THROUGH DECEMBER 31, 1936, BY STATES
(Revised)

State	Number of Projects	Number of Miles of Street-Car Tracks: Removal Completed	Number of Miles of Street-Car Tracks: Removal In Progress
UNITED STATES	224	444.1	182.0
Alabama	2	7.4	1.9
Arizona	—	—	—
Arkansas	2	0.2	0.3
California	3	7.2	0.5
Colorado	1	5.0	—
Connecticut	7	10.0	0.4
Delaware	—	—	—
District of Columbia	—	—	—
Florida	2	8.5	—
Georgia	4	9.9	5.0
Idaho	—	—	—
Illinois	22	59.1	42.8
Indiana	12	10.3	4.9
Iowa	1	1.4	18.8
Kansas	5	25.5	0.4
Kentucky	1	0.8	0.1
Louisiana	2	4.8	0.3
Maine	—	—	—
Maryland	1	0.4	—
Massachusetts	19	12.1	0.5
Michigan	15	101.5[1]	46.6[2]
Minnesota	1	3.4	—
Mississippi	—	—	—
Missouri	3	5.3	15.1
Montana	1	1.4	—
Nebraska	1	0.8	1.8
Nevada	—	—	—
New Hampshire	1	0.5	—
New Jersey	6	1.3	—
New Mexico	—	—	—
New York City	7	47.6	21.9
New York (excl NYC)	16	21.1	4.0
North Carolina	—	—	—
North Dakota	—	—	—
Ohio	40	37.1	2.3
Oklahoma	7	8.8	8.7
Oregon	1	5.3	1.4
Pennsylvania	28	36.9	3.8
Rhode Island	—	—	—
South Carolina	—	—	—
South Dakota	—	—	—
Tennessee	5	2.5	—
Texas	—	—	—
Utah	—	—	—
Vermont	2	0.2	0.1
Virginia	1	0.6	—
Washington	—	—	—
West Virginia	2	2.3	—
Wisconsin	3	4.9	0.4
Wyoming	—	—	—

[1] Includes 42.8 miles of track removed and replaced with new or better salvaged rails.

[2] Includes 10.0 miles of track to be removed and replaced with new or better salvaged rails.

27 States Still Lack Laws for Housing Program

Introduction of the "billion dollar" Wagner-Steagall bill in Congress finds less than half the states with the necessary enabling legislation to conduct their housing programs according to powers offered them in the Federal bill. Only twenty-one states stand ready with laws enabling the establishment of local authorities to receive Federal housing loans and grants, and to direct, plan and manage housing projects, according to the National Association of Housing Officials. Fourteen of the remaining states which are now in session have introduced laws, but have not progressed far toward the governor's signature as yet. All others except two are in a position to act on this matter this year without calling special sessions of their legislatures. Activity should be on the increase this month.

A Brief Summary of the Wagner Steagall Housing Bill

By IRA S. ROBBINS
Counsel, New York State Board of Housing

THE bill* provides for a permanent federal agency to be known as the United States Housing Authority. It is to be an independent corporate body to be composed of three members appointed by the President with the advice and consent of the Senate.

The primary duty of the Authority is to make grants and loans to local public housing authorities, to enable them to build, own and operate housing projects for families of low income. Thus, the present low-rent housing activities of the Federal Government will be decentralized.

The loans must bear interest at the going federal rate, and must be repaid in a period not to exceed sixty years.

The grants are payable, under contracts of grant, in the form of fixed and uniform annual contributions over a fixed period not exceeding sixty years. The annual contribution is limited to the amount and period necessary to assure the low-rent character of the project involved. It cannot exceed a sum equal to the annual yield at the going Federal rate of interest plus one per cent upon the cost of the project. Thus, a local authority may, if necessary, obtain a subsidy equal to the total cost of its project. There is no provision for outright capital grants similar to that contained in previous Federal housing legislation.

In any one year, the Authority may not make contracts of grant providing for annual contributions aggregating more than $10,000,000 per year, exclusive of annual contributions payable under such contracts made by it in prior years. If $10,000,000 is not so utilized in any one year, the balance may be utilized subsequently. The funds for the annual contributions must be appropriated by Congress from time to time.

The bonds of the Authority are unconditionally guaranteed as to interest and principal by the United States. The Authority is authorized to issue a billion dollars in bonds in the next four years, as follows:

$200,000,000 on or after July 1, 1937
$250,000,000 on or after July 1, 1938
$250,000,000 on or after July 1, 1939
$300,000,000 on or after July 1, 1940

In addition to $1,000,000 for subscription to the capital stock of the Authority, $50,000,000 is appropriated. This may be used for annual contributions and for any other purposes of the Authority.

The Authority is empowered to construct and manage demonstration projects, provided the consent of the governing body of the locality is given. Not more than one demonstration project may be commenced hereafter in any one locality. The total cost of all such projects in any one year may not exceed $25,000,000.

The Authority is also empowered to make loans at the going Federal interest rate, to cooperatives and limited dividend corporations. Not more than $25,000,000 dollars may be so loaned in any one year. The amount of any such loan may not exceed 85 per cent of the cost of the project.

* Introduced February 24, 1937, as S. 1685 and H. R. 5033.

An Achievement in Traffic Control

The NEW TYPE D *Simplified* Traffic Controller

. . . .will allow you more controlled intersections for less money.

You will be able to extend your control of traffic with this new, low-priced controller. It offers definite economy with complete flexibility because

It's *Simplified* for

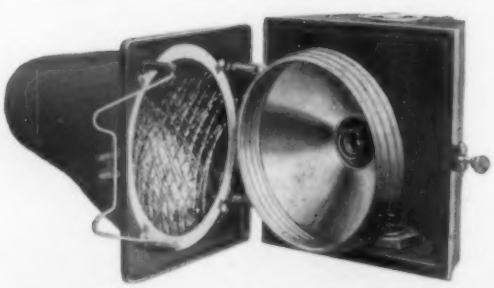
- **Low First Cost**
- **Ease in Installing**
- **Low Operating Cost**
- **Minimum Maintenance**

CHECK THESE FEATURES

- 40- to 180-second cycle range
- Up to 16 cycle divisions
- Completely variable color periods
- Controls up to 15 circuits
- Operates either alone or interconnected

Does a Complicated Job in a Simple Manner

and a Signal that is Flexible in Application



Unit Construction for Complete Flexibility

THE NOVALUX SECTIONAL TRAFFIC SIGNAL

It's built in unit sections that are adaptable to every traffic-signal use. This signal will meet all your present-day requirements and provide flexibility for the future.

Any number of color combinations
All types of mounting and suspension
Adjustable to any street angle

For complete information write to General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC

500-210

The Parking Meter Makes Good

IN July, 1935, press dispatches appeared in the newspapers describing a new device known as a parking meter that had just been installed in Oklahoma City. THE AMERICAN CITY instantly recognized the importance of the event and obtained the facts from Police Chief John Watt of that city.

"These meters have been installed only two days," said Chief Watt, on July 18, 1935, "and we cannot give you any particular comments as to the reaction of the citizens at this time; however, we believe that they are going over in a big way. They are placing the checking of over-time parking on a mechanical basis instead of on the officers. They are going to make it easier for the average citizen to find a parking place, easier for him to park and get out of this space.

"These parking meters were not put in with the idea of revenue. The only tax is a 5 cents charge, which goes toward paying for police regulations. In the course of time, however, they will probably give the city a revenue of approximately $100,000 to $125,000."

Meters Perform Satisfactorily

Chief Watt's confidence has been justified, and already more than 20 cities are using this ingenious method of eliminating the outrageous congestion which unnecessarily blocks main-street traffic and makes parking for the purpose of transacting business in the downtown district mighty close to an impossibility in most of the cities of America.

In the January, 1936, issue of THE AMERICAN CITY, City Manager O. M. Mosier of Oklahoma City reported experience with parking meters and that 300 more meters had been ordered. This was after the District Court had interpreted that "free use of streets" means "travel," and that, as parking can be prohibited altogether, it may be regulated and a fee charged.

Not all the court decisions have been favorable to the installation of parking meters. Where a state law specifies that citizens have a right to the free use of the streets, there is opportunity either for rigid or for "reasonable" interpretation. Interesting, therefore, is the favorable ruling of the Florida Court (December 10, 1936) which allows parking meters "unless and until there is some real, direct and material infraction of rights guaranteed by the Federal Constitution. We are dealing here, not with the right to travel the public streets, which is not denied by either party, but with the power of a municipality to regulate the parking of motor vehicles within that part of the public street primarily designed for travel; by means of which parking such vehicles are allowed to stand in the street either for unregulated and indefinite, or regulated and limited, periods of time, to the exclusion of other vehicles."

The only decision of a state supreme court unfavorable to parking meters which has come to the attention of THE AMERICAN CITY is a recent Alabama case (*City of Birmingham v. Hood-McPherson Realty Co.*) in which the Court held that a real-estate owner has the right to come and go, and park his vehicle alongside his property (within reasonable limitations) without the exaction or payment of a tax or fee to the municipality, and not to have his property defaced by superimposed obstructions, barriers, or parking meters placed alongside.

Success at Dallas

Also in the January, 1936, issue, C. C. Beckenbach, Engineer in Traffic Division of the Police Department, Dallas, Texas, enumerated the advantages obtained by the installation of 1,000 parking meters in his city, as follows:

1. All-day parkers removed from streets.
2. Parking space available at all times for those having legitimate business.
3. Meter spacing (20 feet) allows adequate room for parking.
4. Bumpers and fenders rarely damaged.
5. Little or no waiting for cars to enter or leave parking spaces.
6. Double parking eliminated.
7. Availability of parking space has speeded up traffic.
8. Net revenue from meters ample for traffic improvement needs.
9. Motorists and merchants pleased with new parking conditions.
10. Greater safety.

Passaic Cold, Then Warm

When parking meters were installed in Passaic, N. J., on parts of Main Avenue, Prospect Street, Broadway, and Howe Avenue, *The Herald-News* said editorially:

"Of course there is a tall lot of 'cussing.' And Town Squawkers who do not even own a car are damning the experiment. But please remember the previous condition from which everybody begged escape. The experiment is to last for four months. If by the end of that time it proves a failure, the meters will be removed by the concern that installed them, with no expense at all to the city. If it proves a success, as has been experienced generally where tried, then everyone will be glad.

"Everything will depend upon the manner in which the public reacts to the movement, and upon the manner in which the system is enforced (or *not* enforced) by the Police Department.

"The parking meters should accomplish two results:

"1. Prevent unlawful long-time parking altogether in these areas.

"2. *Guarantee to any and every motorist who drives downtown on business the certain and full enjoyment of the privilege he now has in theory only—that of parking undisturbed for one hour, or any part thereof.* This, in most cases, ought to be worth five cents."

Last September, when the plan was being discussed, this Passaic newspaper said:

"We know of many Paterson shoppers who like to buy in Passaic (when they can) but who drive right through when they find cars lined up, one after another, along our business streets.

"Almost everyone who drives could relate one or many instances of sales lost by Passaic merchants because there happened to be no place to park.

"If metered parking will drive business away from Passaic's stores, we don't want any such system. Neither shoppers nor merchants would want it. But if it will boost sales, bring in out-of-town business that now passes through, and make

OIL MIX No. 54 Tandem Drive Speed Patrol owned by the City of Great Falls, Montana

CONSTRUCTION Railway relocation job of Ralph Meyers near Mansfield, Ohio

BALANCED Design

MAKES THE DIFFERENCE

ONLY A-C SPEED PATROLS GIVE YOU ALL THESE ADVANTAGES:

GRADING & MAINTENANCE Road job of Banks Construction Co. near York, Pennsylvania

- **MORE EFFECTIVE BLADE PRESSURE**... 58.6% to 61.6% of weight is converted into blade pressure, highest of any motor grader. A result of long wheel base, long blade base and center engine mounting.
- **BIG, STURDY 64-INCH CIRCLE**... supplies rigid moldboard support. 35% of circle area is supported in guide shoes—double to triple the usual support.
- **ALL-BOLTED CONSTRUCTION**... prolongs frame life and reduces maintenance. Alloy steel "stretch-proof" bolts and double-thickness nuts.
- **COMPLETE WEAR TAKE-UP**... is your assurance against moldboard chatter, sloppy work and excessive repair bills.
- **PROPER BALANCE AND CONTROL**...for more efficient operation. All parts balanced to work together. Ample weight on front wheels to prevent side-slipping. Engine weight works WITH the blade—not against it.
- **MODERN ENGINES**.. of Allis-Chalmers own make. Gasoline, distillate . . or Controlled Ignition of Diesel fuel oil.
- **POSITIVE TRACTION**.. because of correct weight distribution. In Tandem Drive Patrols, tandem assemblies pivot with unusual freedom—assuring positive traction in irregular footing. No-differential final drive.
- **CORRECT SPEEDS**... for maintenance, oil mixing, scarifying, snow plowing, ditching or traveling. 2.3 to 10 M. P. H.

These are just a few of the reasons why so many contractors and public bodies are specifying A-C Speed Patrols.

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE, U. S. A.

SPEED PATROLS

SINGLE OR TANDEM DRIVE...NO. 42 AND NO. 54 SIZES...GASOLINE, DISTILLATE, DIESEL FUEL OIL

shopping easier for the man or woman who wants to do business in our stores, let's have it."

What have been the results as measured by actual usage? During the complete metering period from January 5 to February 11, a total of 14,200 motorists have dropped nickels to the value of $710 in the meters on these four blocks. In the last few days of this period, from February 2 to 11, revenues amounted to $302.70. "These figures show," remarks the Paterson *Call* of February 12, watching the progress of the Passaic experiment, "an increase of $126.65 over January for the same number of days, which indicates the meters are gaining popularity with the motorists."

Said Mayor Benjamin F. Turner of Passaic on February 20:

"At the installation of the parking meters, some objection was raised by the merchants in the section where the meters were installed; but in less than two weeks they were in favor of the machines and suggested that they be installed in other sections of the city. We intend to install more of the machines from time to time, as the general public seems anxious to have them, and they have been a great help in reducing traffic congestion. No objections to the machines were made by any automobile clubs."

Mayors' Conference Favorable

In August and September, 1936, respectively, the United States Conference of Mayors, Washington, D. C., issued two reports on parking meters.

Report 121 said:

"In our opinion the parking meter is the most noteworthy development in traffic control since the advent of the now universally used traffic light. Downtown parking is a problem in every community, both large and small, and for the first time a solution to this problem is offered by parking-meter systems of control."

The institute of Municipal Law Officers of the U. S. Conference of Mayors, in Report 12, weighed "The Legal Aspects of Parking Meters," and concluded that:

"The authorization of parking meters for revenue purposes would seem to be a proper subject for state legislation, so that should the courts in some jurisdictions hold against the police-power theory, remedial legislation might fairly be sought."

Parking meters are in use in the business districts of the following cities:

Oklahoma City, Okla.
Dallas, Texas
St. Petersburg, Fla.
El Paso, Texas
Miami, Fla.
Houston, Texas
Fort Worth, Texas
Kansas City, Mo.
Meadville, Pa.
Mobile, Ala.
Corpus Christi, Texas
Providence, R. I.
Clearwater, Fla.
Norfolk, Va.
Salt Lake City, Utah
Waco, Texas
San Antonio, Texas
Lubbock, Texas
Toledo, Ohio
Topeka, Kans.
Cumberland, Md.
Tyler, Texas
Long Beach, Calif.
Macon, Ga.
Passaic, N. J.
Ponca City, Okla.
Wichita Falls, Texas

Winning Friends

Motorists and merchants together are likely eventually to bless the parking meter, for a state of street congestion has been reached in most cities where parking must either be prohibited or efficiently regulated. The old rule-of-thumb method by which a scattering of overworked police endeavor to keep some track of parking time, long since broke down, and it was unpopular with both the police and the motorists. The parking meter is the modern solution. You use it, or you don't park in the business district. You are not compelled to park there and pay a nickel. But you not only have the citizen's privilege of doing so, but ordinarily you quickly find a convenient place in which to park your car.

Flint's Tax Collecting Has Been Modern Since 1926

By EDWARD HOLMES
Treasurer, Flint, Mich.

FOR valuation and tax purposes the city of Flint is divided into seven districts of about 80,000 descriptions. Each district is numbered in geographical order, and the same number identifies the property on the assessment roll, the tax roll and the tax bill. This furnishes a quick reference, and accounts are referred to by simple numbers rather than by lengthy property descriptions.

A record of every piece of property in the city is recorded on Addressograph plates, which contain the number of description, the deedholder's name, and the party to whom tax statements are to be mailed and his address. This information is printed on the first section of the plate. The next section and following sections, if necessary, contain the legal description of the property. In unplatted property described by metes and bounds, it may be necessary to use as many as five plates to describe one piece of property.

Changes in property ownership are checked daily at the office of the Register of Deeds, and the plates corrected accordingly. Changes of name by contract sale and changes in property management are made at the window upon proper authorization and plates changed. It is the endeavor of the office to keep the mailing record correct.

The plates are first used in preparing the assessment roll for the Assessor's office. Next, the tax roll is run and returned to the Assessor's office to have the tax spread. This is done by hand from charts prepared in the Assessor's office containing the amount of tax on amounts from $10 to $10,000 by $10 steps. As fast as a book is completed, it is proven by total and page and returned to the Treasurer's office.

Meanwhile the tax bills have been run on the addressing machine, inserting name, address and description.

General city taxes are billed three times a year, and tax bills are printed in three sections and the names and addresses inserted on all three copies at one operation. These sections are perforated. The bills are then given

Reckless Speeders

—SLOW DOWN WHEN THEY SEE MOTORCYCLE OFFICERS

Capt. R. A. Schmoke of the California Highway Patrol—in command of the detail of 39 Harley-Davidsons—keeping traffic in hand day and night on the great San Francisco-Oakland Bay bridge.

There is no longer any doubt about the outstanding value of having uniformed officers on motorcycles patrolling streets and highways day and night. Reduction of accidents and violations has proved to more and more enforcement departments that this method "puts the brakes" on recklessness and speeding. Why? Because motorcycles keep the officers where they can be seen—where their presence makes would-be violators unwilling to "take chances." All the more reason for mounting YOUR squads on 1937 Harley-Davidson Police Motorcycles, whose many improvements make them the ideal vehicles for fast, dependable, low-cost police service. . . . . Phone your nearby Harley-Davidson Dealer NOW—to bring over a new 1937 model for your inspection. Or write us for literature.

Harley-Davidson Motor Co. *Dept. M* Milwaukee, Wis.

SAFETY POSTER Free!

A striking safety poster that has gained nation-wide recognition and approval. Copies free to Enforcement Departments on request. Write promptly as supply is limited.

HARLEY-DAVIDSON

The Police Motorcycle

to the Treasurer's office force for completion. Bills are completed on a special Burroughs adding machine. The assessed valuation is first inserted, using a non-add key, then special assessments and penalty, then one-third of the city tax and a total of the first installment; then one-third of the city tax is placed on the second and third sections of the statement. These are totaled and proved for each page on the roll.

The sections are then separated and the proper statement mailed to the taxpayer when due. These bills are mailed in duplicate.

The taxpayer presents both the original and the duplicate at the window. The clerk receiving the bill initials and hands it and the money to a cashier, who perforates and signs the original and initials and perforates the duplicate. The original is then returned to the taxpayer with his change. This method is very rapid in handling crowds and gives a double check on change. The rolls are not checked at the time payment is made. Practically the only delays are caused when the taxpayer neglects to present his tax bill, and duplicate bills have to be made at the window. Even in this case, if the description is lengthy, the addressing department supplies the description in a few minutes.

After the receipts are posted to the tax rolls (daily), they are added by installment and by district. A control is kept on a Burroughs bookkeeping machine showing the total collection by installments and by districts. A record is also kept on this machine of all special-assessment collections, including pavement, water main, sewer, sidewalk. These collections are posted to the accounts daily and show at a glance the total amount paid and the amount still due. We bill and collect the county tax on the same number of descriptions once a year.

The public is benefited by the fact that long waiting in line is eliminated. The fact that bills are sent out every four months reduces the amount that the taxpayer has to pay and reduces delinquency; the fact that he is billed frequently is also a reminder.

The office force comprises thirteen exclusive of the Treasurer and deputy, with some extra help hired at the time of preparing the bills and when making the delinquent returns to the county. There are two Addressograph operators, two cashiers and two assistant cashiers, and two bookkeepers, and the rest of the force waits on window and handles mail and telephone calls.

Taxpayer and City Pleased with Quadrennial Assessment

By H. R. YATES
City Auditor, Roanoke, Va.

IN the city of Roanoke we have a quadrennial assessment of real estate made as follows: a Board of Assessors, appointed by the Court of Law and Chancery, determines the taxable value of real estate; the State Corporation Commission, the value of Public Service Corporation holdings; the Commissioner of Revenue, the assessed value of personal tangible property. The tax rate is limited to a maximum of $25 per $1,000 of valuation.

In addition to the Board of Assessors, the same Court appoints an Equalization Board, whose duties are to equalize an assessment whenever anyone feels he has been improperly assessed. The Board has power to raise or lower the assessment as it sees fit. In addition, any person aggrieved by any such assessment can, within two years from the 31st day of December of the year in which any such assessment is made, appeal to the Court for relief.

The original assessing board makes up an assessors' land book in numerical order, showing the number, the name, address of owner of property, description, land value, building value, and total value.

This book is then turned over to the Commissioner of Revenue, and the information is put on cards and arranged alphabetically. The Commissioner of Revenue then makes out a new land book showing the same information contained in the assessors' land book, and in addition shows the amount of tax and breaks down the taxes in quarterly payments.

After this book is completed and checked, it is then turned over to the Treasurer, who makes out the tax bills and mails them to the landowners.

For personal property, each person of legal age under the law is required to make out a tax return with the Commissioner of Revenue, who from these returns makes up a personal property tax levy.

This book is made up alphabetically, showing the person's name and address, and the first few columns show the state levy, state capitation tax, bonds, notes, money in bank and capital. The next columns give the city levy, city head tax, intangibles, amount of tax and total. After being checked, this is turned over to the Treasurer, who makes out the personal property tax bills.

Our land book and personal property book are written on large typewriters, and the tax bills are made up on Remington-Rand accounting machines. Our present tax bill forms were started about 1913, and the bills were changed, showing quarterly payments on the 1936 levy.

By ordinance of the City Council, taxes on real estate for the tax year beginning January 1 are due as follows: One-quarter March 31, June 30, September 30, and December 5, of the year of levy. Three per cent discount is allowed on payment of all or any quarters paid on or prior to March 31, and 2 per cent on all or any quarters paid on or prior to June 30. Taxes unpaid on December 6 carry a penalty of 5 per cent until June 30 following, after which date interest is charged at the rate of 6 per cent per annum on tax and penalty until paid.

Personal property taxes are payable between November 1 and December 5, and those not paid on December 6 are subject to a 5 per cent penalty and, if unpaid by June 30 following, are subject to interest at 6 per cent per annum on tax and penalty until paid.

This system has proved very satisfactory to the city and to the taxpayer.

Maintain Design Capacity

Barrett Water Works Enamels form a lining in pipe so smooth that the capacity of a system is maintained for years to come. They increase the coefficient of flow, and eliminate tuberculation. No other material offers greater resistance to moisture absorption than coal-tar pitch, which forms an efficient protection to electro-chemical corrosion, soil acids, alkali and earth currents.

THE BARRETT COMPANY
40 Rector Street New York, N.Y.

Barrett
WATER WORKS
ENAMELS

FIELD SERVICE

The Barrett Company maintains a Pipe Line Service Department to assist engineers in all coating problems, and also has available Field Service men whose assistance is offered where Barrett's protective coatings are used. Inquiries are invited.

44" diameter steel pipe
City of San Francisco, Cal.

Organization for Sanitary Surveys of Flooded Areas

U. S. Public Health Service Presents Simple Form for House-to-House Canvass

DURING the past few years this country has been visited by several disasters, such as floods, tornadoes and dust storms. As a result of these occurrences, the actual work of disaster relief has been placed on a firm foundation, so that rescue work, food and clothing distribution, and temporary housing have been handled in a well-organized manner. The sanitarian's duties have been confined mainly to the important considerations of a safe supply of water and milk, and of sewage disposal. Following this, the sanitarian must gather the essential data to facilitate rehabilitation and eliminate illness that might be caused by the flood.

Methods Used

In order to obtain uniform data, it was essential to devise a simple survey form which could be used in a house-to-house canvass. A form is here reproduced, which presents the data under four main headings.

The first heading, "General Data," relates to information as to the number of occupants in the flooded home, whether or not they are on relief, and the location and type of construction of the dwelling.

The second heading, "Sanitary Data," is designed to determine the condition of the water supply, the sewage-disposal system, the height that the water reached in the dwelling, the present level of the water, and certain information on the occupants' plans for cleaning their home. This house-to-house survey provides an opportunity for instructing the householder in the correct way to clean the home and its environs, the mode of using disinfectant, and where the substance can be obtained in the locality free of charge.

The third subject concerns information of a medical and epidemiological nature. The surveyors are instructed to inquire about any illness existent in the home, and to record illnesses which have occurred since the flood. It will be seen that those illnesses which are at times associated with disasters have been especially noted on this

PRELIMINARY SANITARY SURVEY OF FLOODED AREAS

1. GENERAL DATA: SHEET NO..... DATE.....
Tenant's name..... Street.....
Borough
Number occupants..... Working..... Relief..... Township.....
Owner's name..... Address.....
Type of dwelling: Detached..... Apartment..... Number stories..... Brick.....
Frame..... Garage..... Stable.....

2. SANITARY DATA:
A. Water: Public..... Private..... Condition of.....
B. Sewers: Public..... Privy..... Cesspool..... Septic tank.....
Condition of.....
C. Flood limit: Cellar..... First story..... Second story.....
D. Present level: Cellar..... First story.....
E. Occupant's plans for clean-up.....
F. Instructions furnished on clean-up.....
G. Date when cellar pumped out..... Was disinfectant used.....

3. MEDICAL DATA:
Sickness in family..... Age..... Date of onset.....
Diarrhea..... Typhoid..... Diphtheria..... Scarlet fever..... Measles.....
Physician on case..... Name of family physician.....
Did occupant move..... Address moved to.....
Date returned.....

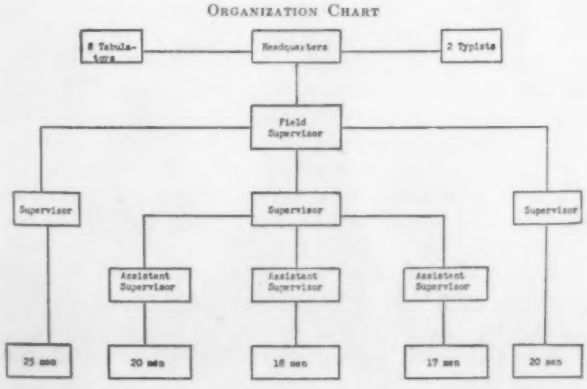
4. REHABILITATION DATA:
Estimate of damage: Cellar walls.....
Floors..... Walls..... Furniture.....
State general condition of structure .....
Utilities: Light..... Gas..... Telephone.....
Surveyed by..... Checked by.....

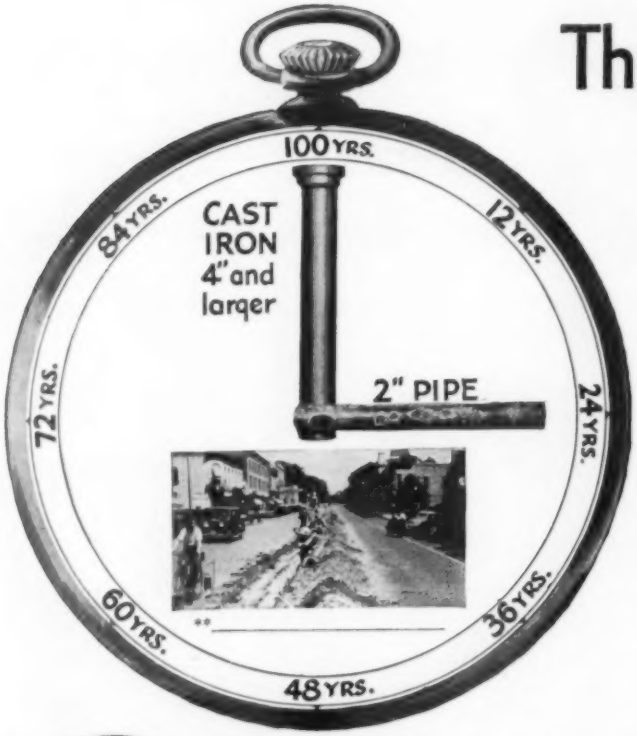
form. However, the investigators are also instructed to record, in the margin, any other sickness not specifically mentioned. It was thought advisable, in the event of an epidemic, to obtain information as to the number of persons who had moved during the flood, where they moved to, and the date of return to their own homes. It is apparent that such information is of value to the medical authorities, since it is then possible to determine the number of persons who have been exposed to disease, and also the actual location of the exposed persons. The last subject covered by this survey deals with physical damage to the structure itself, its contents, and such items as light, gas, and telephone service.

Organization

Owing to the fact that it is highly essential to obtain this information in a brief period of time, the facilities of the local WPA should be used. The accompanying chart gives a picture of the organization devised for the conduct of a survey. The supervisors should be appointed immediately, and the purpose of the study as well as the various items in the form discussed with them. It will be noted that almost all the items in the form require merely a "yes" or "no" answer. The supervisors should be furnished with maps of the area to be surveyed, headquarters established in the various areas, and transportation furnished for both supervisors and surveyors. The men who are to make the house-to-house survey should then be assembled and the details of the study explained to them. The data are recorded in triplicate, so that one copy can be furnished to the city or town officials, one to the Red Cross, and one kept in the district health department headquarters for the use of the physicians and engineers. As much publicity as possible should be given the survey through the newspapers and radio, so that full cooperation will be assured on the part of the householders.

ORGANIZATION CHART





The *Little* hand is even more important

LONG 18-FT. LENGTHS

BIG mains . . . cast iron pipe . . . corrosion resisting . . . good for 100 years of service — all accepted facts.

After all 30% of the footage in your distribution system is **small** pipe, so why not apply the same experience . . . the same logic . . . the same saving by using McWane 2 in. Cast Iron Pipe in these small mains.

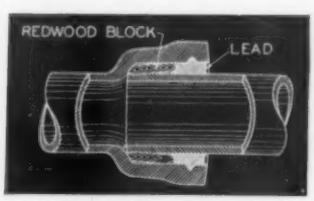
2" CAST IRON PIPE

Small mains are often laid in filled ground . . . cinders and mixed soils . . . **corrosive hot spots.** Yes, **cast iron** pipe is even more important in your **small** mains!

McWANE PRECALKED JOINT

**Cutting expensive pavements . . . even more costly replacements . . . are eliminated when you use McWane 2 in. Cast Iron Pipe.

"Just socket and calk"



Simple! Sure! Self-tightening! The Precalked materials are already in the bell. No lead pouring. Nothing to buy. Just socket the spigot and calk!

Sand Cast Inside and Outside

McWANE CAST IRON PIPE COMPANY

BIRMINGHAM, ALA. SIZES 1¼" THROUGH 12"

Chicago, Dallas, Denver, Kansas City, New York, Portland, Ore., Salt Lake City, San Francisco, Los Angeles.

over 25,000,000 FEET IN USE

(*Continued from page* 95)

Master tabulation sheets for recording the data should be prepared for each day. In addition to the men engaged on field work, about ten girls are needed to do tabulating and typing. Eight of the girls should be trained to work in teams of two in tabulating the data, one to read the essential information while the other tallies. They set aside the form for special disposition if any illness has been recorded or damage to sanitary facilities or to the dwelling itself. A medical case is starred with a black crayon, a sanitary case labeled with a blue crayon, and a dwelling in need of immediate repair to the structure itself is marked with a red crayon. These marked forms are collected by two typists who immediately make a separate list of the medical, sanitary, and rehabilitation cases. In this way immediate attention can be given to those families in need of assistance of one kind or another. The medical officer is kept informed by this technique as to the kind of sickness prevalent in his area, and the number of persons involved. The sanitary engineer knows which water or sewer facilities are damaged, and also obtains some idea of the number of places needing disinfectant. The Red Cross and the town or city officials are appraised of the families requiring immediate aid.

This method was used most successfully in the spring floods of 1936 in the northeastern section and during the Ohio River flood in the winter of 1937. This article was prepared from a report of J. M. Dallavalle, Passed Assistant Sanitary Engineer, and J. J. Bloomfield, Sanitary Engineer, U. S. Public Health Service, and is now available as Reprint No. 1751, Public Health Reports, from the Superintendent of Documents, Washington, D. C., for

Council-Manager Government Suits Port Arthur

By J. C. WATKINS

THE five infant years of council-manager government in Port Arthur, Texas, a town of 55,000 inhabitants, have been stormy ones indeed. In April, 1932, a new charter was passed providing for a city manager and a council of seven members to serve terms of two years. After some consideration, Robert L. Cooper, former Highway Engineer for the New Mexico Highway Commission and then City Manager of Albuquerque, received appointment as Manager of Port Arthur.

The horizon was certainly not a bright one for the new administration. The city's credit rating was at zero, with creditors threatening. The floating debt was $315,832, and the banks were pretty doubtful about the advisability of advancing more funds. Tax collections were down alarmingly.

The first act was to slash operating costs, reducing general fund expenditures from a monthly average of $33,720 in 1931 to $20,319 in 1932, and squeezing the figure down the next year to an average of $14,698.

To restore creditors' confidence, payments on outstanding accounts were begun. The light bill alone was two years in arrears and totaled $64,300. The street lights were turned off, and were not turned on again until 1936, when this particular debt was entirely discharged.

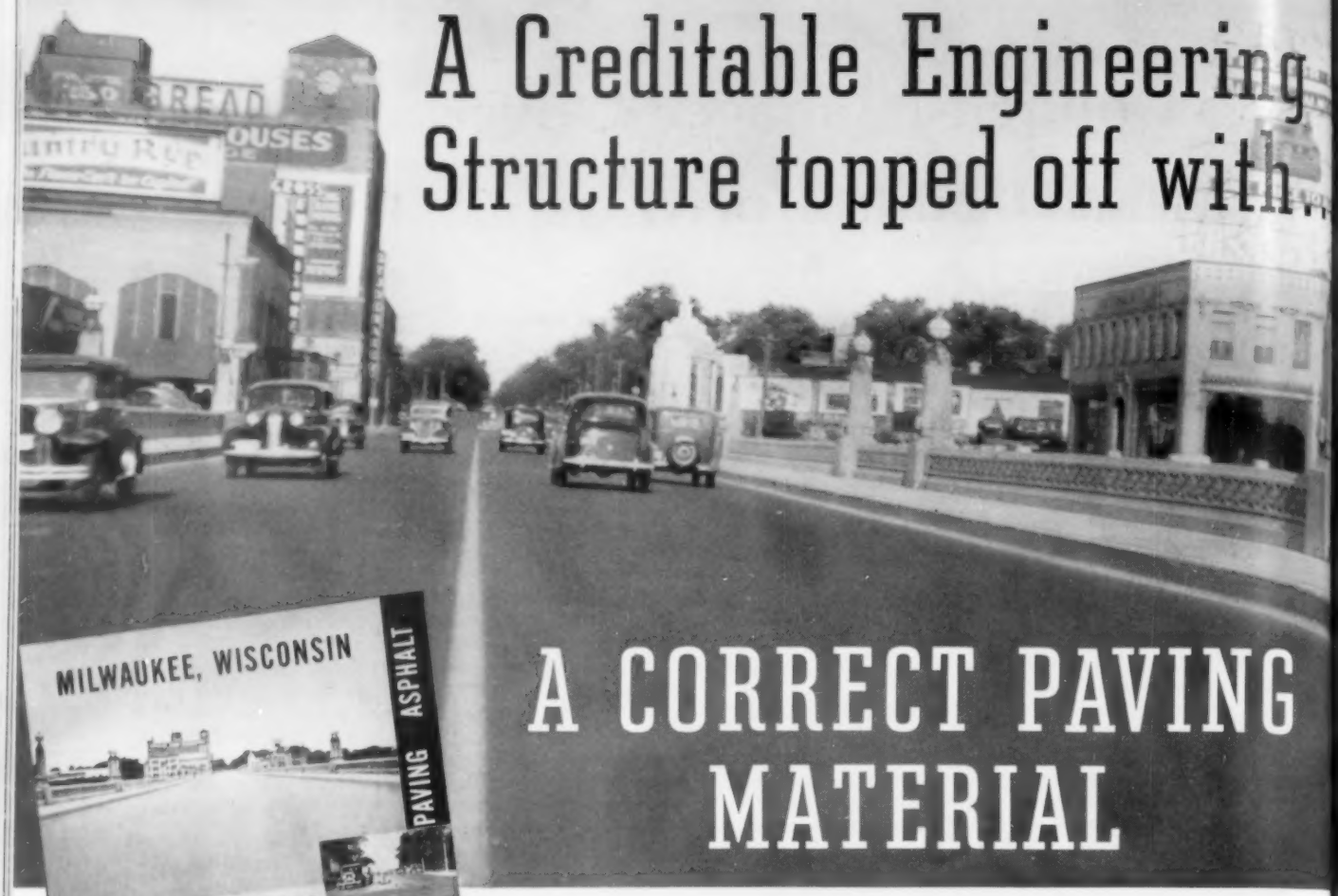
To encourage tax payments, the administration matched its reduced expenditures with a 36.65 per cent tax cut.

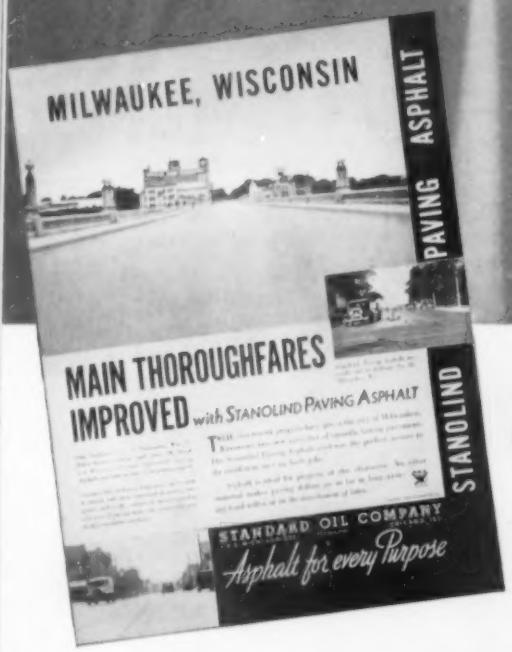
Five years of close supervision has put the government back on its feet. Municipal services are expanding once again; taxes and expenses are higher. During the retrenchment program employees' salaries were reduced a total of 33 1/3 per cent, but by 1936, 23 per cent had been restored. Reductions in personnel also are being recovered. The original floating debt of $315,832 has been wiped out, bonded indebtedness has been reduced, and the city is headed toward operation on a strictly cash basis. The city's water-works bonds and interest are now paid from Water Department revenues rather than from the general tax levy, this change having been effected not through raised taxes but through efficiency in operation.

The success of the council-manager form of government in Port Arthur is not reflected in figures alone. The administration has cut political turnover and built departmental personnel into an efficient organization guided by business principles. The new charter, offering no financial compensation for council members, has encouraged only the public-spirited to offer themselves for this job. The work of the new administration has been sufficiently effective from every angle to hold the support of the populace through a spirited campaign waged against it in 1936 by a former mayor.

AERIAL VIEW OF PORT ARTHUR, TEXAS

A Creditable Engineering Structure topped off with...





This advertisement appeared on completion of the paving of W. Wisconsin Avenue (from North Story Parkway to North 35th St.) in Milwaukee. This work was known as U. S. Public Works Project NRM268-E and was carried on under the supervision of the Wisconsin State Highway Department. This street carries traffic of U. S. Highway 18 and Wisconsin State Highways 19 and 30.

The upper photograph shows a section of this job over the Wisconsin Avenue viaduct as it appears today.

Standard Oil (Indiana) Engineers will be glad to consult with you on the selection of paving materials to meet your particular paving problems.

STANOLIND SHEET ASPHALT

THREE YEARS AGO this advertisement said: "No other paving material makes paving dollars go so far in long-wearing road miles."

Although the pavement illustrated has only started on a marathon of years of maintenance-free service, it does show what can be done, where high grade engineering and Stanolind Asphalt Products are combined. Despite heavy traffic demands or extreme weather conditions, Stanolind Sheet Asphalt will fully justify the confidence and judgment of engineers and contractors that recommend it.

We repeat again. Stanolind Sheet Asphalt will give *you* more long-wearing road miles and at the lowest cost when based on ultimate economy.

Copr. 1937, Standard Oil Co.

Asphalt for every purpose

STANDARD OIL COMPANY
(INDIANA)

Hot Water Cooled for Domestic Use

Riverside, Calif., Reverses Usual Procedure Because Source Is a Flowing Well of Warm Water

THE city of Riverside, Calif., has completed an interesting system for cooling warm water from a flowing well to a temperature suitable for use in the city mains. The well water reaches the surface at 110 degrees F. and is brought down to 80 degrees by an evaporation cooling system. This 20-inch well was drilled to a depth of 1,000 feet in 1930, tapping an underground stream of hot water. The artesian well has a flow of 1,800 gallons per minute and a pressure of 10 pounds per square inch at the surface.

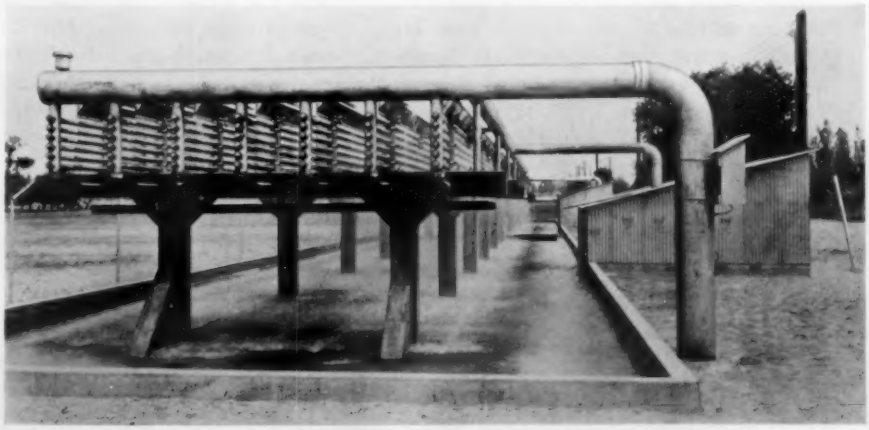
When this water was turned into the mains, so many complaints were registered by patrons because of its temperature, that the city was obliged to discontinue its use. For six years the municipality had an arrangement with one of the irrigation companies whereby the warm artesian water from the city wells was used for irrigation, and the irrigation company supplied cool water from its wells to the city. This arrangement, however, was never entirely satisfactory.

Several plans were considered for cooling the water economically. Many were discarded because the installation cost would be too great. The system finally adopted consists of coils, over a basin, through which passes the water to be cooled. A film of water over the coils cools them by evaporation. Through this arrangement the temperature of the water going into the mains has been reduced to an average of 80 degrees.

The water from the well is pumped by a Fairbanks-Morse 8-inch horizontal centrifugal driven by an F-M 20-hp, 1,500-rpm motor. This unit has a capacity of 1,800 gallons per minute against a head of 35 feet, which takes care of the friction in the coils and provides sufficient head to deliver the total output of the well into the main leading to the city's distribution system.

Cooling water over the coils is delivered through headers to specially designed troughs which distribute the water evenly in a thin film over the coils. A continuous record is kept of dry- and wet-bulb temperatures, and a recording thermometer registers the temperature of the water from the plant. An 8-inch F-M horizontal centrifugal driven by a 7½-hp, 1,000-rpm motor, and having a capacity of 1,200 gallons per minute against a 20-foot head, handles the cooling water. It can be used for the entire coil system, or, by closing a gate in the center of the header pipe, only half of the coils. A second identical pump is installed, permitting a total pumpage of 2,400-gpm over the entire system of cooling coils if desired.

THE 8-INCH F-M CENTRIFUGAL FOR PUMPING WELL WATER, AND ONE OF THE COOLING-WATER PUMPS



THE CLOSED COIL SYSTEM WITH EXTERIOR COOLING WATER WHICH LOWERS THE TEMPERATURE OF THE WELL-WATER SUPPLY OF RIVERSIDE, CALIF.

Fort Wayne Sends Drinking Water to Cincinnati

AN interesting example of inter-municipal cooperation during the height of the recent flood emergency resulted from the message then broadcast by Mayor Harry W. Baals, of Fort Wayne, Ind:

"City of Fort Wayne can furnish four trucks mounted with 600-gallon tank equipment on vehicles for emergency drinking water. Will load trucks at Fort Wayne with pure water. Trucks can be used for period of emergency."

Almost immediately came this reply from City Manager C. A. Dykstra, of Cincinnati:

"Thanks Fort Wayne. Water badly needed. Send at once."

And later this telegram to the Mayor, from Ralph R. Quinn, of the Cincinnati relief staff:

"May I express our hearty thanks and the thanks for the thousands of those who will benefit by obtaining drinking water from the three tank trucks which we understand will arrive here before morning. This is the greatest need in Cincinnati and will probably remain so for several days. There is plenty of drinking water in artesian wells near the city and you are helping us to provide the means of transporting it which is so badly needed."

HE USE OF BRICK IS A GUARANTEE AGAINST WEATHER DAMAGE

• Chestnut St., Meadville, Pa., paved with brick on gravel in 1898. Excellent condition today.

• Chicago's Loop has put down many brick streets recently.

• Brick paved, steel arch bridge wins 1935 award from American Inst. of Steel Construction.

• Brick paved Cincinnati-Lookout Mountain Road.

• Following the severe winter of a year ago, many communities complained of the damage done certain of their pavements.

A City Reports on Brick

But where brick was the pavement, the criticism was rarely, if ever, heard. Typical of brick performance was one city reporting that "$20 would cover the damage done its large yardage of brick pavements." Other cities report similar performance over a period of 30 years or more.

The prevention of weather damage to pavements grows increasingly important. The annual cost is gigantic. Traffic damage may be regulated by law. *But weather damage may be regulated only by the use of the most resistant materials* plus good engineering as a matter of course.

Brick Virtually Indestructible

The weather resistance of brick goes back to the unit itself—one of the least destructible materials known. It is chemically inert—not subject to future change. Its exterior surface is vitrified or fused making it impervious to water or moisture. Laid according to accepted practice its resistance to weather and traffic is further increased.

Plan to build brick pavements because they give greater value. Use it on new work. Practically any type of failing pavement may be resurfaced to advantage with it. National Paving Brick Association (Affiliated with Structural Clay Products, Inc.), National Press Building, Washington, D. C.

Exhibitor A. R. B. A. Convention, New Orleans, January 11-16, 1937
31st Annual Meeting National Paving Brick Association, Detroit, January 27-29, 1937

BRICK

FOR NEW CONSTRUCTION OR RESURFACE JOBS

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

A River-Front Transformed

EVANSVILLE, IND. — An improvement combining beauty and utility, originally suggested in 1929 by the City Plan Commission of Evansville, in its report on "The City's Appearance," was finally realized in 1936. The result is shown on the front cover of this issue.

This transformation of an inadequate, dilapidated river-front into a boulevard and park, with provisions for increased traffic, augmented river service, and extended recreational facilities has been accomplished through assistance of the Public Works Administration. With a PWA grant of $185,727, the city of Evansville completely rebuilt sections of Water Street, the Sunset Park front, and covered Bee Slough in such a way that ordinary rises of the Ohio River can no longer damage the business establishments along the shoreline. The entire work-creating project, started May 14, 1936, cost $412,500.

Water Street is the southmost outlet of Main Street. To the east is the wide Sunset Boulevard. To the west are the freight yards and many factories. Traffic along the narrow brick bottleneck street was continually congested with trucks and automobiles vying for passageway. From the pavement, down to the sluggish Ohio, was an old brick incline which had been damaged by many severe floods. There were no satisfactory facilities for loading and unloading steamers.

To the east was Sunset Park. Its high earth banks were undercut by the river. Further east was the odorous Bee Slough, which carried sewage into the Ohio. It overflowed its banks with every flood, often doing considerable damage to the recreational facilities of Sunset Park.

To eliminate the bottleneck, Evansville tore up Water Street, making it as wide as Sunset Boulevard. The uneven brick pavement was replaced with modern pavement, so that four lanes of traffic could be accommodated.

The cobblestone of the incline was replaced with concrete, and a system of approaches was built so that trucks might load and unload directly onto river steamers.

The entire front of Sunset Park was likewise inclined and fortified against the swirling floods with a thick deposit of heavy, broken limestone boulders. This extends far beyond Bee Slough to the water works, which lie adjacent to the famous "No Man's Land," a comparatively unoccupied Kentucky territory left on the Indiana side when the Ohio changed its course 30-odd years ago. The Slough itself has been covered in such a way that recreational facilities of Sunset Park may be extended, now, for many hundreds of yards.

Helping Citizens to Learn About Their Government

SOUTH ORANGE, N. J.—Recently, greater interest is being aroused in more attractive municipal reports. Efforts are now made to make these reports more easily understood, through graphs, etc. This is necessary in large cities, to permit the taxpayers and interested citizens an opportunity to quickly become informed. Then, too, the amount and number of figures might be confusing. In a small place, however, perhaps more complete information is desirable. South Orange village had a population in the 1930 census of 13,630. Since 1901 it has had the minutes of all its meetings, regular and special, printed in full in the weekly local newspaper. The publication gives the complete minutes, and not a summary. It costs $75 per month, on a flat fee basis. In addition to this publishing, the village receives 500 copies for other distribution. Any citizen may have a copy mailed, on application.

These printed minutes list the attendance of the officials, a transcript of important communications, and a summary of the less important ones. The reports of the Treasurer, Collector of Taxes, Police and Fire Chiefs, Inspector of Buildings, Superintendent of the Water Department, and Overseer of the Poor are given. Then follow the bills, as presented, giving vendor's name, amount, and the Department receiving the material and/or the service. The salaries of individuals are also given.

The functions of government in the village are directed by a number of committees of the Board of Trustees, also the usual commissions, boards, etc. They make reports, from time to time, which are also included. Action is carried forward through motions, resolutions and ordinances. The minutes include these and how the Trustees voted on them. At the end, a full copy of all ordinances, official notices of hearings, etc., is printed.

The Village President is required by our charter to present annually his message. This is, of course, also printed, as is an itemized copy of the budget.

By this means any person interested in any activity of the Village Government may learn of it and what it costs, and the position the elected representatives took in relation to it. This would seem to make election campaigning a hard job, with such an open record. Perhaps the fact that the officials arrange for such publicity may have something to do with the lack of competition at our village elections, which are separate from all others. There has been opposition to the non-partisan Citizens Party League but once in over twenty years. The opposition then lost by about four to one.

The governing body is not entirely satisfied that all its residents are fully informed about its affairs. It has accordingly arranged for the Village School, consisting of eight sessions in the Village Hall. A course has been outlined that is designed to personally explain each department and function. These lessons should supplement the printed reports and place residents in a better position to understand them. No one can state that the Village Government is trying to conceal any of its activities.

PETER A. SMITH,
Village Trustee.

THE VILLAGE SCHOOL

With the Co-operation of the Board of Education and All Village Commissions, Etc, There Will Be Conducted Eight Sessions, One Each Thursday Evening, Beginning January 21, 1937 at the South Orange Village Hall, at Eight P. M. All Residents Are Invited. No Charge Will Be Made. We Hope You Will Accept This Opportunity To Learn About Your Government

The Village President and Board of Trustees

SOUTH ORANGE ANNOUNCES ITS VILLAGE SCHOOL

Instalment Payment of Taxes

OUTREMONT, QUE. — Examine your budget, make a request for permission to pay your taxes by instalments, and your request will be granted; provided the taxes are not already overdue for more than two years. No fines are imposed for delays in payment of taxes other than the interest accruing at 6 per cent from the due date of the taxes imposed. (This is in accordance with the Law of the Province of Quebec). A slip is attached to the tax bill, and the Account Current practice, similar to that in operation in

CONCRETE
pays out . . .
not only on long life but on
low maintenance!

Niedringhaus Ave., Granite City, Illinois. This concrete pavement has been in service since 1922 without ever being closed for repairs. Note new concrete which replaced car track recently.

Whether a street is still in good condition after ten or fifteen years of service, tells only half the story. The other half is: how much money was spent on repairs and maintenance? Look at both parts of the story and you get a true picture of concrete's economy.

M. E. Kirkpatrick, mayor of Granite City, Illinois, states:

"We favor concrete pavement for our streets because our experience shows it has long life. Once laid, there is no repair cost for the surface for many years. Niedringhaus Ave., our main business street, was paved with concrete in 1922. This street carries from 3,000 to 5,000 cars a day. There has been no interruption of traffic since the street was completed."

The bonds that paid for Granite City's concrete streets have been retired, and the pavements are still in first class shape.

Design your next streets with concrete. Give your community the benefits of its proved economy, its safety, cleanliness, comfort and long, trouble-free life.

PORTLAND CEMENT ASSOCIATION
Dept. 3-4, 33 W. Grand Avenue, Chicago, Illinois
A National Organization to Improve and Extend the Uses of Concrete

During March we hope you will remember to mention THE AMERICAN CITY.

commercial enterprises, is followed: a column for the date, one for instalment paid, and a column for interest—interest charged on the total claim at the statutory rate less interest credited at the same rate on instalment payments already made. The amount of interest received is recorded in the city's books only at the time of the final instalment payment.

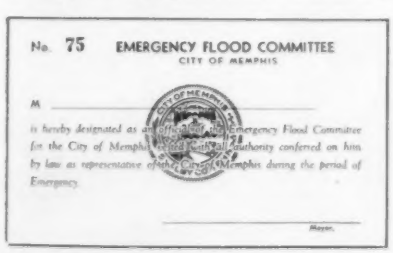
Furthermore, the city of Outremont has eliminated all posting of tax payments to the tax collection rolls. Instead, a complete duplicate set of all tax accounts issued is kept in cabinet files for each fiscal year. A helpful color scheme has been adopted. The color of the tax accounts varies for each year, and subsidiary tax cash books, operated on the loose-leaf plan, are of corresponding colors. The subsidiary tax cash books are kept in operation until the entire cash collection for each of the respective years has been completed. The stubs of the tax accounts are detached when payment of the account is made, and the duplicate account without the stub is replaced in the file, but in the reversed position. Monthly reconciliations with the tax control accounts and the tax cash books, of taxes outstanding and of taxes paid, are easily made upon a Burroughs listing machine. We find this system operates perfectly, and great economy in time has been effected.

E. T. SAMPSON,
City Clerk and Treasurer; Fellow, Institute of British Municipal Treasurers.

How a Flood-Safe City Helped the Less Fortunate

MEMPHIS, TENN.—When the Ohio and Mississippi Rivers swept southward in the recent great flood, Memphis became the flood capital of the Mississippi Valley. Built high on the Chickasaw bluffs, safe from disaster, the city was a natural haven for some 50,000 refugees from neighboring states.

Confronted with the double task of aiding the Red Cross to care for the flood victims and building up its own facilities against any possible emergencies, the City Commission granted Mayor Watkins Overton extraordinary powers to expend funds and commandeer supplies. The Mayor appointed a municipal emergency flood committee to mobilize citizens and

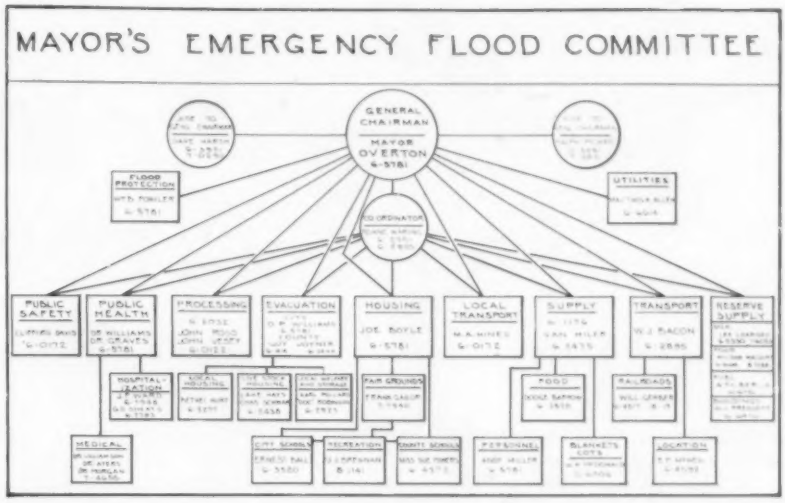

No. 75 EMERGENCY FLOOD COMMITTEE
CITY OF MEMPHIS

M _____

is hereby designated as a member of the Emergency Flood Committee for the City of Memphis, with all authority conferred on him by law as representative of the City of Memphis during the period of Emergency.

_____
Mayor.

resources of Memphis to cooperate with the Red Cross. The committee included two aides to the General Chairman (Mayor), chairmen of public safety, flood protection, public health, refugee camp, hospitalization, cots and blankets, housing, processing, public buildings, evacuation, utilities, transportation, purchasing, personnel, railroads, medical care, livestock storage, food, milk, and fuel supply.



The city government plunged into action, working 24 hours a day. Every department was pressed into service, and sleep became an unknown quantity as officials toiled from dawn to dusk and back around the clock. The City Personnel Division, Memphis Employment Center, and Memphis Welfare Commission concentrated on labor and volunteers. Flood relief work was the order of the day in every division of municipal service, from the purchasing agent who handled Red Cross orders, to the airport crowded with scores of aerial craft. Federal and other governmental agencies hurried to the scene, and Memphis became the base for the TVA, CCC, U. S. Army, Navy, Marines, Coast Guard, Public Health Service, Forest Service, WPA, National Guards, and Tennessee State Health Department in their efforts to aid the stricken territory near the city. Memphis business, civic, and professional groups, local utilities, and individual citizens volunteered their services.

To care for the refugees, a camp was set up at the Fairgrounds, a 124-acre tract with a dozen permanent buildings, owned by the city. Numerous barracks, bath-houses, kitchens, mess-halls, and other structures were built at high speed by the Department of Public Service to provide added facilities. City electricians handled all wiring and maintenance. The Municipal Auditorium served as receiving point to register, inoculate, feed, and route refugees on arrival. The city closed eighteen schools and used twelve as refugee centers and hospitals. Six community houses were used as clothing and relief depots, and the new $125,000 Juvenile Court building proved an ideal hospital for 200 sick refugee children.

Public health measures were stringently enforced. All refugees, on arrival, were given typhoid immunization and smallpox vaccination. Sanitary inspectors supervised the camps and centers, and communicable diseases were immediately isolated. Clinics were held. John Gaston Hospital, a city institution, opened its buildings to as many cases of illness among refugees as possible, and another isolation hospital was built on its grounds. Private hospitals aided in the task, and one of the city's finest junior high schools was set aside as a refugee hospital. Oakville Sanatorium, a city-county institution, cared for tubercular cases.

To avoid dangerous overcrowding, some refugees were transferred to other Tennessee, Mississippi, and Alabama towns which reported adequate facilities available and volunteered to share the task of Memphis. The flood committee arranged for transportation, food, and medical care en route for the refugees.

Memphis required no protection from flood on its river front, since the city is far above Mississippi crests, but took precautions against the backwater which the swollen river forced upstream and over lands adjoining Wolf River in the extreme north and Nonconnah Creek in the south. The North Memphis pumping station, a $1,500,000 plant which has a capacity of 600,000 gallons a minute, prevents backwater over one area of 2,130 acres. A levee of 500,000 sandbags was built on the Wolf River front beside this station, over a stretch of about a mile. The city also sent crews and carloads of sand to aid the county government in building up Nonconnah Creek levee, south of Memphis.

The Mayor checked all utilities and found that none could be affected by high water. The water supply is drawn from artesian wells, hundreds of feet below ground.

In sections where some backwater was inevitable, the Engineering Department evacuated 700 Negro families who had delayed moving, and the Memphis Welfare Commission aided them to find new housing. Health, safety, and public service officials quarantined all water-damaged houses for inspection and repair before occupancy.

Thus Memphis passed safely through the greatest flood in the nation's history and lent a helping hand to thousands of its neighbors, many of whom are still quartered in its refugee camps, to remain until they can return to their own homes.

LOUISE GAMBILL,
Municipal Reference Librarian.

SERVICISED QUALITY PRODUCTS © 1920

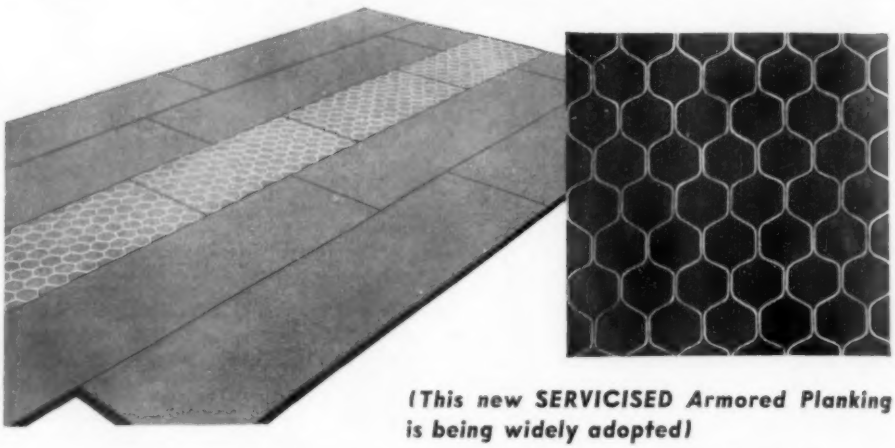
Servicised ASPHALT PLANKING

SERVICISED

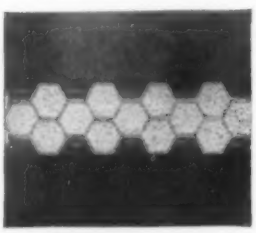
• WHERE THE TRAFFIC IS HEAVY! Specify Servicised Armored Planking.

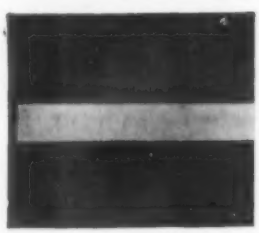
Servicised Armored Asphalt Planking is a tough product for surfaces that get a lot of punishment,—for bridge decks, bridge and viaduct approaches, ramps, etc.

The steel armor resists abrasion, prevents skidding, and controls flowing of Asphalt Planking under stress of heat and pressure.



(This new SERVICISED Armored Planking is being widely adopted)





• Many installations of Standard SERVICISED Asphalt Planking still provide a durable, weather-proof, resilient paving after more than ten years of service.

Servicised Planking has assumed many additional responsibilities since it was first produced for bridge decks and approaches:—roofing, siding for refrigeration chambers, industrial flooring, stair treading are a few of other services in which it is now proving its worth.

Servicised Asphalt Planking is furnished in plain, rock-surfaced and steel armored types.

Full details and prices will be furnished on request. Write for special Bulletin.

Method of laying Servicised Asphalt Planking on the 96th and Stoney Island Underpass, Chicago.
Here the Planking is being cemented down in hot asphalt over membrane waterproofing. It will protect the membrane, deaden the shock of passing trains and be permanently moisture proof.

TRAFFIC MARKERS

1. Above are illustrated two types of traffic markers. No. 1 shown at the top consists of a heavy steel grating imbedded in the Asphalt Planking and filled with abrasive material, thus forming a non-skid center line marker.

2. Marker No. 2 consists of a cement rib keyed into the surface of the Asphalt Plank material.

SERVICISED PRODUCTS CORP., 6045 WEST 65th STREET, CHICAGO, ILL.

When you write for that catalog, kindly mention THE AMERICAN CITY

A Financial Service to Local Industry

PATERSON, N. J.—The Industrial Commission of the city of Paterson has appointed a capital structures committee, consisting of a public accountant, a trust officer of a bank, the local referee in bankruptcy, the president of the local bar association, and a retired manufacturer, to serve local industries in need of financial aid. The purpose of the committee is, briefly, to aid the Commission along three lines:

1. Giving advisory service to industries seeking assistance from the Commission in arranging their financial problems, particularly in enabling them to secure such help as they need in the way of credit for legitimate business requirements and which they cannot obtain through the ordinary channels.

2. Serving as an intermediary between individual industries seeking financial assistance and the various agencies constituted by the National Government to afford loans to deserving borrowers; in other words, to help industries seeking Government loans to present their data in such a way that they are most likely to obtain the desired assistance from the National Government.

3. Formulating a program whereby the various manufacturing industries in the city now in bankruptcy, receivership or various stages of reorganization, may be rehabilitated and put on their feet financially so that they may again resume active operations in Paterson at the earliest possible moment.

The competitive strength of a plant in outside markets, its ability to meet overhead and to pay a living wage, is, as a rule, no stronger than its financial structure. The Committee on Capital Structures will render a continuing service to the industries of the community with a view to promoting their competitive health and vigor, so that they may become more firmly rooted in the industrial structure of the city.

HERBERT S. SWAN,
Consultant, Industrial Commission,
Paterson, N. J.

Shuffleboard Comes to Land

ST. PETERSBURG, FLA.—The game of shuffleboard has disembarked at St. Petersburg. It has been associated for so long with ocean travel that one seldom finds a shuffleboard court apart from the deck of a ship. In Florida, however, the game has taken root among the winter vacationers and has even been carried north through their enthusiasm.

The construction of the courts is very simple. The regular blueprint used by the Park Department of St. Petersburg indicates a court 52 feet by 6 feet. Construction details put out by the Portland Cement Assn. provide for two layers of concrete. The bottom layer should be 4 inches thick and composed of 1 part cement, 2 parts clean course sand, and 3½ parts crushed stone or gravel. In this base course should be set a mesh reinforcement. That used in St. Petersburg is made of ⅜-inch round steel bars placed 6 inches from either edge of the court and then 1 foot center to center longitudinally. The transverse bars are of the same material and are placed 2 feet apart, and all bars are wired at each point of contact. This webbing is placed approximately in the center of the bottom course concrete. For the top layer of concrete the specification is 1 part cement, 1 part clean sand, and 2 parts fine crushed stone or gravel. This should be compacted with a wood float, then steel-troweled, and, finally, hard-troweled to attain a smooth finish. If it is desired to color this top, Cabot's lamp black may be used at the rate of ½-pound per bag of cement, or black oxide of iron may be used. In either case the color material should be well mixed with the dry cement before it is mixed with the sand or the water. The surface must be carefully cured to prevent surface checking or cracks, by keeping the finished surface wet for ten days. Then it should dry for four or five days. The court surface thus prepared, it is ready for marking according to the playing diagram of the game.

CONCRETE SHUFFLEBOARD COURTS, ST. PETERSBURG, FLA.

The cost of these courts in St. Petersburg when put in by batteries, varies from $85 to $150, depending on the cost of material and labor in each locality. The formula for building differs only slightly from that of the Portland Cement Co.

Shuffleboard has become increasingly popular in Florida, for it is a game that can be played by all ages, is easy to learn and yet calls for enough skill for really good playing to interest the more exacting. St. Petersburg alone has over 6,000 members in its four clubs, and each year sees more courts added. The Recreation Bureau here is also able to supply evidence of increasing interest in the game in the North through a record of the many inquiries received, especially from schools and colleges.

Apart from the shuffleboard craze, St. Petersburg devotes attention to other forms of adult recreation for the entertainment of its thousands of winter visitors. Provision is made for the various activities through clubs; shuffleboard, roque, lawn bowling, tennis, archery, chess clubs and others. The clubs are on city property but are allowed to set and collect their own dues and elect their own officers. The dues are used for maintenance and any further improvements that are needed. In this way a fine type of personnel is obtained without cost to the city, and the members are happier in knowing it is *their* club. For those of 75 and over, there is the Three-Quarter Century Club, whose members play diamond ball twice a week as well as engaging in other activities. For the youth, playgrounds are maintained at the school grounds, and harmonica bands are organized in each school. During the summer months, diamond ball is the favorite sport of both young and old.

P. V. GAHAN,
Superintendent, Recreation Bureau.

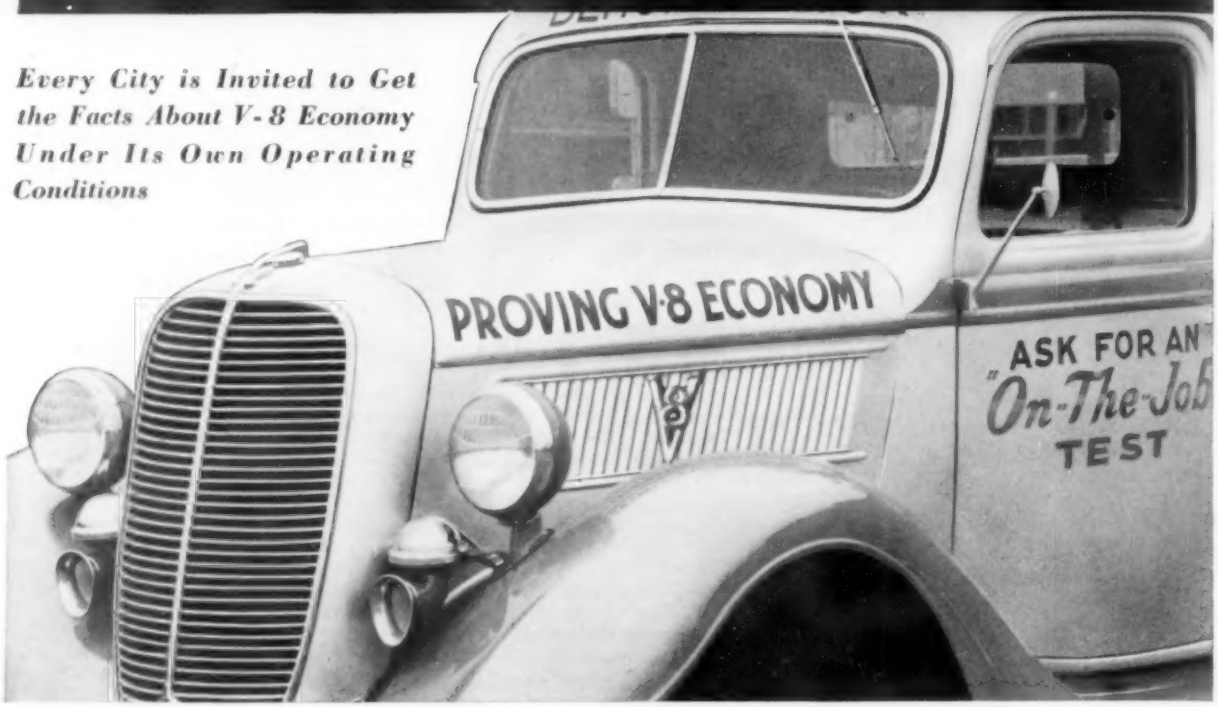
HORACE M. ALBRIGHT HEADS AMERICAN PLANNING AND CIVIC ASSOCIATION

At the annual meeting of The Board of Directors and Advisory Council of The American Planning and Civic Association, held in Washington February 12, Horace M. Albright was elected president; Harold S. Buttenheim, first vice-president; Col. Richard Lieber, second vice-president; and Earle S. Draper, third vice-president. George W. White and Harlean James were elected treasurer and executive secretary.

Frederic A. Delano, who for the last twelve years has served as president of the Association and of its predecessor, the American Civic Association, was elected Chairman of the Board of Directors.

WINNING NEW OWNERS BY ACTUAL PROOF!

Every City is Invited to Get the Facts About V-8 Economy Under Its Own Operating Conditions



WHEN you buy your next truck, what will you want to know . . . what it IS . . . or what it DOES? In either case, your Ford dealer is prepared to PROVE the outstanding advantages of Ford V-8 Trucks and Commercial Cars.

If you are interested in mechanical detail, your Ford dealer can give you the facts about any part . . . and tell you its effect on power, speed, economy, reliability, safety, comfort and appearance. And if you are interested in RESULTS, he will be glad to let you make your performance and economy tests under your own operating conditions.

This year, every type in the Ford V-8 Truck and Commercial Car line is available with an 85-horsepower engine improved to give new economy on heavy-duty and high-speed operations. And types commonly used for light delivery work are also available with a new 60-horsepower V-8 that is setting new records for high gasoline mileage. Ask your Ford dealer to demonstrate the engine best suited to your individual needs. Call him today and set a date for an "on-the-job" test.

Convenient, economical terms through the Authorized Ford Finance Plans of the Universal Credit Company.

FORD V-8 TRUCKS AND COMMERCIAL CARS

Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York
Paul L. Green, Chairman; John T. Gibala, Vice-Chairman; William C. Brandes, Otto K. Jelinik, Burton W. Marsh, William R. McConochie, E. J. McIlraith, Donald M. McNeil, D. Grant Mickle, Robert A. Mitchell, P. Taylor, Rayburn Hoffman

How Kansas City, Missouri, Designs Safety Zones

By T. J. SEBURN
City Traffic Engineer

THE purpose of the safety zone is to furnish maximum protection to the pedestrian. In designing this zone, the first requisite is to determine the character of the traffic, bearing in mind that slow traffic, however heavy, is less hazardous than fast-moving traffic. In the first case, painted lines and mushroom buttons are adequate, as shown in the right photograph. In the last six years we have not had an injury reported in this type of zone used in the more heavily congested areas of Kansas City. It is recommended for districts where speeds are 15 to 20 miles per hour.

Where there are higher speeds, it is necessary to do something to prevent the vehicle from entering the reserved area. In various cities this has been accomplished by raised platforms, pipe stanchions, abutments, and combinations. In order to do justice to the driver and his car and passengers as well as to the pedestrians, these features should be considered in the design of a safety zone:

1. A raised platform for pedestrians
2. A heavy wall to stop a vehicle before it enters the reserved area
3. Some means of deflecting a vehicle
4. Some means of reducing the damage to a colliding vehicle

The photograph at the bottom shows a safety zone designed for the foregoing features. The triangular-shaped abutment is constructed with a sloping top that rises to a height of 20 inches above the pavement at the headwall. The front end of the vehicle is lifted from the pavement by this device, and as the axle slides on the concrete the kinetic energy is dissipated until the speed is decreased considerably before collision with the headwall.

Visibility

The safety zone must be clearly seen both by day and by night. For daytime visibility, the headwall is painted with alternate black and white stripes. The best way to light the zone at night is to floodlight it so that all details stand out clearly, as well as in daylight. Red reflectors should be used in the headwall to serve as a warning in case of power failure.

THIS STOPS 'EM
A raised platform for pedestrians; a means for deflecting vehicle and reducing damage to it; floodlighted at night; red reflectors on headwall to warn should power fail

STANDARD FOR HEAVY, SLOW TRAFFIC
No injuries on these in six years

Car Inspection in Chicago

THE following is a summary covering the compulsory inspection of motor vehicles in Chicago from July 1, 1936, to January 20, 1937:

	Number
Motor vehicles registered	520,000
Motor vehicles approved	480,000
Motor vehicles rejected	265,097
Total number of inspections	742,025

CAUSES FOR REJECTION

Horn	2,987
Windshield wiper	7,048
Clear vision	3,112
Stop light	50,533
Tail-light	17,438
Rear vision mirror	3,206
Muffler	2,305
Lens	27,290
Dim lights	10,318
Parking lights	18,013
Steering	8,057
Headlights out	11,328
Headlights high	43,493
Headlights low	45,394
Wheel alignment	36,584
License plates	8,723
Brake pedal	22,457
Brake effort	47,807
Brake equalization	110,563
Hand brake	25,182
Trailer brake	160
Auxiliary lights	14
Total	502,012

There are approximately 520,000 motor vehicles registered in Chicago, of which number 480,000 have been inspected and approved, leaving about 40,-

but that's not all you gain by

CALCIUM CHLORIDE curing of Concrete

THE fact that two pounds of Calcium Chloride with every bag of Standard Portland cement more than doubles one-day strength is now verified by the U. S. Bureau of Standards. You get the increased strength when you need it, for quicker pavement opening, earlier removal of forms (for other jobs), safe, quick handling and shipping of blocks and other products.

In addition to high early strength you get:
Lowered volume changes reduce cracking and crazing.
A more plastic mix which fills forms better.
You get a smoother finish, and do it easier.
Finishing may follow pouring in shorter order.
You can use lower water ratios with resulting greater strength.

On top of all these, you get better concrete always, in all ways, higher ultimate strength, a sounder job all through.

Write any of the firms below for literature on Calcium Chloride in concrete.

CALCIUM CHLORIDE ASSOCIATION

The Dow Chemical Company	Midland, Michigan
Michigan Alkali Company	60 E. 42nd St., New York City
Solvay Sales Corporation	40 Rector Street, New York City
The Columbia Alkali Corporation	Barberton, Ohio

CALCIUM CHLORIDE

YEAR 'ROUND CONCRETE CONSTRUCTION

000 uninspected. However, approximately 18,000 of this number have been inspected, rejected and not returned to the inspection lanes for approval; also, of this number about 8,000 vehicles have been junked, leaving approximately 14,000 vehicles that are unaccounted for. Arrests are being made daily of motorists who have not as yet complied with this inspection ordinance, and it is anticipated that all vehicles registered in Chicago will be inspected prior to April 1, the beginning of the next inspection period.

The attitude of the public as a whole toward this inspection project has been very encouraging, as all law-abiding citizens realize the purpose of the law is to rid the streets of mechanically unsafe vehicles, and are cooperating with this Commission in a very enthusiastic manner.

Inasmuch as this compulsory inspection law has only been in force since July 1, 1936, we have been unable to determine with any degree of accuracy whether or not the enforcement of this law has resulted in any decided improvement in our motor-vehicle accidents. However, over an inspection period of a year such an improvement should be very apparent.

EDW. J. GORMAN,
Deputy Commissioner, Public Vehicle License Commission, Chicago, Ill.

Automobile Storage Facilities in Chicago's Business District

THE central district of Chicago between Lake Michigan and the Chicago River, from Roosevelt Road to Grand Avenue, now supports 177 establishments offering off-the-street parking for 25,131 cars per day. These facilities are receiving 90 per cent usage, compared with 75 per cent for the facilities available in 1931. The area thus allotted to automobile storage equals a total space 547 x 5,280 feet, or 1/10-mile by 1 mile.

Philadelphia Directs Traffic from Roof of High Building

ON November 28, 1936, the West Point Military Academy and the Naval Academy at Annapolis played their annual football game at the municipal stadium in Philadelphia. The estimated attendance was 105,000, making this the largest football game ever held in the East.

A serious problem was presented by the necessity of moving 15,000 cars from the immediate vicinity of the stadium within, if possible, one hour, this having been one of the terms of agreement between Mayor Wilson and the Academy authorities. This was much more difficult than it sounds, since the municipal stadium is located on a peninsula in the southern part of the city, adjacent to the League Island Navy Yard, and all traffic must move north only.

This problem had been studied by the city's traffic engineers since last spring, and it was realized at that time that it would be a physical impossibility to accomplish the desired objective unless additional roadways were constructed, paving improved, bridges widened, and extremely efficient methods of moving vehicular traffic devised.

Accordingly, a site was chosen on the roof of one of the towers of the Naval Hospital located a short distance from the stadium. This tower is sixteen stories from the ground, and from it one can see all four of the principal roadways leading from the stadium and the cross streets. Loud-speaker equipment was placed at half a dozen points in this area; field telephones were placed at several lesser points; proper wiring arrangements were made so that the voice of the officer on the tower of the Naval Hospital could be heard at the various points.

The real problem of the traffic engineer was to overcome the natural tendency of traffic, left to itself, to use Broad Street exclusively, the capacity of which is not over 5,000 cars per hour in one direction. So well did the control system function that no trouble was experienced in diverting the traffic at intervals into roadways that were not being used sufficiently. The observers on the tower, as soon as it was noticed that a certain street was not carrying its load, notified the officers on the ground, and within a few seconds traffic was diverted from the more congested streets into those carrying the lesser loads. Within one hour and five minutes after the game was over, it would have been possible for traffic to flow freely in any direction within the area.

From a traffic-engineering standpoint the lesson to be drawn from this experiment is that enormous concentrations of vehicular traffic can be handled from high observation posts and that there are are only two rules to be observed:

1. That a sufficiently high point be used to obtain a full view of the area under observation.
2. That some means of communication be it by radio, telephone or loud-speaker system, be adopted and that the underlying principle of the whole process is adequate and careful planning and estimation of movement, plus an unremitting effort to keep all lanes of traffic flowing freely during the critical period.

T. E. TRANSEAU,
Assistant Director, Department of Public Safety, Philadelphia, Pa.

The Traffic Engineer

THE amount of investment the average large city has in its streets runs into hundreds of millions of dollars. The correct routing of traffic, the establishment of sound speed limits, of signal systems to control that traffic, all call for a high degree of engineering skill. A traffic engineer is as important to a city or a state as is the operating engineer to the railroad.

PAUL G. HOFFMAN,
President, The Studebaker Corp., South Bend, Ind.

Stop-and-Go Signals to Flash at Night

AGITATION to turn out during part of the night some or all of the stop-and-go signals, has caused the city of Chicago to experiment with the practicability of changing the functions of these signals late at night. It is felt that such a signal when not operating should serve as a warning or stop signal.

At 23 intersections in commercial, industrial and outlying areas, these signals have been made flashing yellow except at the approach to a through street, where they are flashing red. The equipment provides for automatic changeover from normal operation to flashing and back, at predetermined hours, later on Saturdays and Sundays.

The equipment, furnished by Paragon Electric Co., consists of two time-clock motors and two dials, one for week days and one for week-ends, enclosed by an aluminum housing mounted back to back with the traffic-control housing on a single pedestal at the intersection.

The accident record before and after installation has been as follows:

Personal injury	8	3
Property damage	5	4
Fatal	0	1
Total	13	8

W. C. BRANDES,
Traffic Signal Engineer, Bureau of Streets, Chicago, Ill.

New York's New Code

ONE of New York's oldest traffic traditions was outlawed when right-turns on the red signal were prohibited under the new "traffic code" effective February 21. Left and right turns are allowed only on the green signals, except where an officer, green arrow or sign permits the turn on red. Signs painted red and white permitting right or left turns on red lights are being placed by the police at several thousand corners that will be made exceptions.

Dangerous driving includes weaving in and out, cutting in, turning on red, traveling on the wrong side of the road on a "blind-curve" or up a "hill," and "risky-speed," which means more than the lawfully allowed speed. The speed limit generally is 25 miles per hour. One-speed roadways may be designated and a driver going 8 or more miles per hour *less* than the permitted speed on parkways may, at the discretion of the police, be ordered off said roadway at the next exit.

Police are also given authority to stop vehicles along highways for the purpose of testing brakes or steering mechanism.

Overtaking on a two-way roadway is permitted on either the left or the right side, if the overtaken vehicle is not forced out of its right of way.

Backing into crosswalk or intersection, getting out of vehicles into the traveled part of the roadway, working on vehicles in roadway, and other dangerous practices, are forbidden.

JOHN T. GIBALA,
Assistant Engineer, Chief Engineer's Office, Police Department, New York City.

ARMORTITE UNDERGROUND CABLE

You can not afford to experiment with BURIED CABLES

In city lighting, most engineers recognize the advantage of underground cables. But, they also know that it is very expensive and disrupts service to have any failures after the cable has been buried. Only *proven* underground cables should be used.

Hazard Armortite Cables are time tested. Millions of feet have been in active, constant service for many years. No conduits are needed for Armortite, as the conductors are protected from moisture and mechanical injury by plastic sealing compound, asphalted jute coverings and non-metallic tape armor. Armortite is light in weight, easy to handle and moderate in cost, and permanent. Bury Armortite directly in the ground, and you can forget it.

Send for the Armortite Booklet.

HAZARD INSULATED WIRE WORKS

Division of The Okonite Company

WORKS: WILKES-BARRE, PA.

Sales Offices:

New York Chicago Philadelphia Buffalo Boston Detroit
Atlanta Seattle Dallas Pittsburgh San Francisco Los Angeles Washington

Improving Municipal Administration

Current Items from the Public Administration Clearing House

Police and Sit-Down Strikes

POLICE chiefs called upon to referee a sit-down strike face one of the hardest assignments of their careers, according to Arnold Miles, police consultant, writing in *Public Management*, magazine of the International City Managers' Association, which features in its February issue a symposium on strikes.

Although the sit-down, at first glance, appears to reduce greatly the possibilities of violence, since picketing does not figure in the technique, and the use of strike-breakers is limited, there are at least three things to make the situation difficult, says Mr. Miles. First, strikers who occupy an employer's property without his consent are regarded as trespassers under the law, and in many states trespassing is not only a civil offense, but a criminal offense as well. Second, if sit-down strikes have not been held to be trespassing in a state, a court injunction may still require that the trespassers be removed from the employer's property. Third, the possibility of property destruction is much more real in a sit-down strike than in any other type of strike.

From the police standpoint, according to Mr. Miles, "it is when force becomes necessary that the sit-down strike differs most from past strikes." If there is doubt that the strikers are actually committing criminal trespass, and if the strikers have attacked neither persons nor property, the police have no grounds upon which to attempt eviction under legal interpretations. If a sit-down strike is clearly established as criminal trespass, or if a court injunction has been issued ordering the strikers to evacuate the plant, the police chief or sheriff must attempt to remove them. Failure to do so may at once subject the police department to charges of favoritism from the employers and probably from the public, and to a citation for contempt of court for not enforcing the injunction. If it is a large body of stay-in strikers that must be evicted, the police chief faces the possibility that the local police force is not large enough to get them out without property damage.

Implications of the sit-down strike have already shown themselves to labor leaders and labor unions, however, says Mr. Miles, to the effect that the device must be used carefully:

"While the legality of the sit-down has not yet been passed upon by any of the appellate courts, generally speaking, it would not be surprising to see it declared illegal. Furthermore, if the sit-down is held to violate legislation governing the free movement of interstate commerce, it would then be in violation of Federal law as well as state. . . . A principal weakness of the sit-down is its utter simplicity. Such a strike can be started at any time by any worker who sits down and stops working, and, if carried out, can completely throttle industries organized on the assembly line principle. For this reason, even if the sit-down were not illegal, it would not be surprising if labor itself permitted its use for collective rather than individual bargaining where a major question is at stake. . . . While the sit-down strike places labor in a strategic position if it wants to destroy property, labor cannot afford to allow wholesale property destruction."

The outcome police chiefs should hope for, Mr. Miles comments, is a full understanding before the law of labor's rights, privileges and responsibilities, which will be definitely to the advantage of labor, employers and the police in time of strikes.

Infrequent Assessments Held Mistaken Economy

INFREQUENT property assessment is called a mistaken economy for taxpayers by Albert W. Noonan, Technical Director of the National Association of Assessing Officers, as local governments in many states put assessing corps to work on their biennial, triennial and sexennial reassessments.

Mr. Noonan cites Pennsylvania as a case in point. Pennsylvania's 1936 triennial assessments will provide the base for tax levies during 1937-38-39, he explains, although the valuations written into the 1936 assessment roll were largely influenced by depression factors. If the present trend in material and labor prices continues, cities and counties in the state will find the current cost of operations increasing in like proportion. Property values also will increase. But because it will not be possible to adjust assessed values in accord with such gains until 1940, the result necessarily must be curtailment of governmental services or increased tax rates, since assessed values cannot be raised to the proper level.

Ohio, Mr. Noonan adds, is faced with an even graver problem because reassessment in that state is on a six-year basis. Last year strong effort was made to defer the 1937 sexennial reassessment until 1938, in order to take advantage of expected property value recovery. The Legislature declined to act, however, thus forcing the prevailing values to become the base for tax levies during the next six years, while all signs point to substantially increased commodity prices and property values.

Mr. Noonan points out that it has long been generally believed that because of the relative stability in real estate values, annual reassessments were an unnecessary expense and that economy was better served by requiring reassessment of real estate at two-, three-, four-, five-, six-, and in one case, ten-year intervals. Only 21 states, according to Mr. Noonan, have laws providing for annual reassessment. Nine states make it a biennial affair, and the rest reassess at periods ranging from three to ten years. While in some cases ample provision is made for annual adjustments, in the majority, the assessment, except for new buildings, must remain fixed until the next reassessment period.

Another unfortunate feature of infrequent assessment, he comments, is that it provides only a very limited opportunity for the employment of competent personnel on a full-time basis, a necessity if good assessments are to be secured.

How Will the "Trailer-Home" Be Governed?

RECOGNIZING the importance of the house trailer in American life, and citing estimates that by the end of 1937 there may be 1,250,000 persons calling 400,000 trailers "home," four national governmental associations have made a joint study of the governmental problems resulting therefrom. The report, entitled "The House Trailer: Its Effect on State and Local Government," was released on February 11 from the Chicago headquarters of the American Municipal Association. Researchers of the American Public Welfare Association, the American Society of Planning Officials, and the National Association of Housing Officials also took part in the survey.

The extent to which the American populace is taking to the road in permanent homes on wheels is indicated by the fact that in the eight months from March 1 to November 1, 1936, the state of Virginia licensed 5,678 house-trailers, more than twelve times as many as were licensed during 1926 and twice as many as in 1935. Crop pickers, waiters and other seasonal employees, and traveling business men, are reported using the trailer as a permanent home in increasing numbers.

Many American cities and towns, as well as the states, have suddenly awakened to the fact that they have a trailer problem, and that the problem has many angles, says the report. "For public officials, trailer problems must be regarded as severely practical considerations which must be solved by tomorrow if possible, and not later than next week in any case."

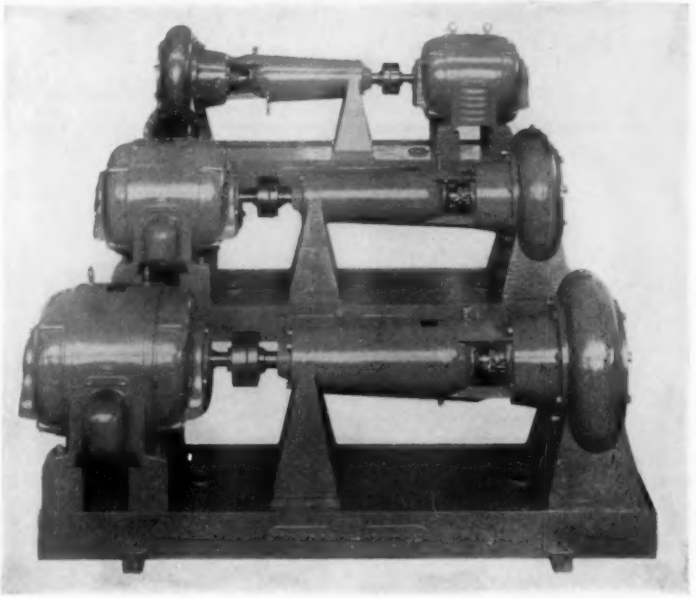
Here are some of the governmental questions emphasized in the report:

A Worth-While SEWAGE PUMP *must* be "NON-CLOGGING"

Unless a sewage pump is ACTUALLY "non-clogging" it cannot adequately meet YOUR requirements.

VICTOR - KIMBALL - KROGH Sewage Pumps meet your most rigid specifications.

1. Everything which passes into the pump—comes out
2. The packing box is under vacuum —not pressure
3. No "bleeder holes" to form ball-shaped obstructions
4. Fully ball-bearing, of course
5. Non-corrosive in service
6. Heavy castings for longer wear
7. Easily installed—economical to own and operate
8. For horizontal or vertical positions
9. For wet or dry pits
10. Designed and built by a manufacturer with over 70 years of pump building experience.



You will want Bulletin No. 601 because it offers conclusive reasons WHY Victor-Kimball-Krogh "Non-Clogging" Sewage Pumps are outstandingly satisfactory. May we send you this comprehensive bulletin?

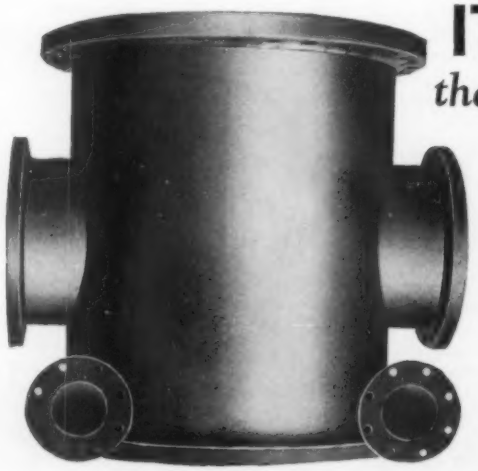
VICTOR EQUIPMENT COMPANY
Kimball-Krogh Pump Division

1010 East 62d Street
Los Angeles

VICTOR KIMBALL KROGH

515 Harrison Street
San Francisco

LFC



IT IS THE UNUSUAL—
that brings out Foundry Technique

"LYNCHBURG" has built its enviable reputation on its ability to produce difficult "SPECIAL" fittings and big cast iron pipe of the finest quality—work that demands the best Foundry Technique . . . Special equipment, and an organization trained to the job enable us to boast that a job does not come too large or difficult for us to handle with dispatch . . . Write, Wire or Phone "Lynchburg" for quick estimates.

Bell and Spigot Pipe and Fittings. From 4" to 54".
Cast Iron Flanged Pipe. From 3" to 84".
Cast Iron Flanged Fittings and Flanges. From 1" to 84".
Super-de Lavaud Centrifugal Cast Iron Pipe.

Special Iron Castings for the Chemical Industry

Make your plans NOW to attend the 57th annual convention of the American Water Works Association to be held June 7-11, 1937, at the Hotel Statler, Buffalo, N. Y.

LYNCHBURG FOUNDRY COMPANY

Peoples Gas Building
Chicago, Ill.

GENERAL OFFICE - LYNCHBURG, VIRGINIA

50 Broad St.
New York, N. Y.

The city plan commission wants to know where to locate trailers and how many to provide for, because zoning regulations must be met and ordinances amended in some instances to meet new conditions which trailers have created. The local fire laws, health regulations, police and traffic codes, have much to say about trailers and are being studied and changed in many states and their subdivisions. Trailers are not fireproof, and, gathered in numbers on a limited area, are a definite fire menace. The health department is concerned with groups of people in small living quarters whose methods of waste-disposal can have a detrimental effect on the community. Although the trailerites have not yet created a welfare and public assistance problem, the question of legal responsibility will arise with more and more frequency as the trailer migrants encounter ill-health, financial embarrassment, expensive accidents, repairs and hospitalization. Schools will be called upon to educate trailer children suddenly thrust upon them by parents who have taken up local residence, from choice or from necessity, for financial or health reasons. Existing state housing codes will have to be invoked or amended, and some states will face the need to study housing standards and to provide effective statutes. Trailers present two tax problems—their effect on other taxable property, and their possibilities as a source of tax revenue.

At least 17 states have enacted laws specifically regulating tourist camps. These laws, the report points out, may easily be brought up to date to cover trailers and trailer camps. State planning boards, the report advises, should at once begin to survey the facilities available to trailers in each state. Analysis of 1,000 trailer camps shows that between two-thirds and three-fourths of them are located outside the corporate limits of cities and villages but near their borders. Thus the regulation of most trailer camps is at present primarily a county problem, and state regulations for trailers and trailer camps can be made to apply in county areas. Counties with doning authority can use it for specifying the land to be used for trailers, the report adds.

New as they are, trailers have already caused municipal officials much concern in certain localities, according to the report. In Miami, Fla., for example, the influx of trailers has become so great and the establishment of camps so general that it has been found necessary to enact a special trailer ordinance. Ordinances have also been passed recently in Oakland, Long Beach, Banning, and San Diego, Calif.; St. Petersburg, Fort Lauderdale and Clearwater, Fla.; and Phoenix, Ariz. Helena, Mont., has established a city-controlled trailer camp.

Use of trailers as houses can be either encouraged or discouraged by municipal officials, the report points out. Establishment of a time limit for trailers in camps or elsewhere within the municipal limits, as has been done in a few cities, and strict enforcement of housing codes are discouragements. There is little doubt expressed, however, that if cities do not allow trailers to be occupied as permanent dwellings, those people desiring to make them so will simply move outside municipal limits into county areas where regulations are less stringent.

Though free to deal drastically with this new form of housing through direct application of existing health and housing standards, municipalities are urged to take advantage of the good points in the trailer movement.

Encouragement of trailers as permanent dwellings by municipalities implies a willingness by officials and the public alike to face squarely the challenge to traditional housing standards. This means a revision of housing codes and their strict enforcement, especially with regard to overcrowding.

"A re-examination of the entire question of adequate housing standards would be the most fortunate result of public desire, be it limited or general, to use trailers as permanent dwellings," the report points out. "The most unfortunate results would be the enactment of statutes and ordinances sanctioning life in trailers under housing conditions which would not be allowed in standard dwellings."

On the matter of trailer taxation, the report says that "although it is too early to suggest what forms it should follow, it is assumed that trailers should be required to provide revenue to meet the additional financial burdens which they bring to states and localities, such as in highways and schools, utilities, fire and police protection."

Collaborating in the preparation of the report were H. G. Ogden and Arnold Miles, American Municipal Association; Paul P. Oppermann, American Society of Planning Officials; Louis E. Hosch, American Public Welfare Association; and Edmond H. Hoben, National Association of Housing Officials.

National School Proposed for Municipal Finance Officers

PROPOSAL for a national school for municipal finance officers and their staffs, to be held once a year, was approved by the Executive Board of the Municipal Finance Officers' Association of the United States and Canada at its recent meeting in Chicago. A committee of the Association has been appointed to start the school in the spring of 1938. The plan for a national school, according to D. P. Turnbull, City Auditor of Kalamazoo, Mich., President of the Municipal Finance Officers' Association, grew out of experience with the three-day training courses sponsored by a number of state leagues of municipalities and other agencies concerned with city government in recent years.

A two or three-week session is suggested by the Board for the Municipal Finance Officers' national training school, so that problems facing finance officers of large and small cities alike may be explored more thoroughly. Instructors would be selected from the best available specialists in the United States and Canada. Classes would be held five or six hours each day, and the curriculum would be devoted to the more important fundamental subjects confronting the finance officer, such as accounting, debt administration, taxation, economics, statistics and office organization.

In recent years the work of the finance officer has become much more complicated, President Turnbull points out, owing to "the necessity of his handling debt problems and devising accounting systems to meet demands imposed by the need of good local administration and by the requirements of state and Federal agencies. Too little importance has been attached to the necessity of studying methods of organizing an office to carry out the job properly, and to presenting statistics to the public on financial affairs in such a manner that they are not misleading. Economics must become a part of the finance officer's knowledge today, also, since he must handle the intricate problems of debt administration and taxation."

The school is designed as another step in the program of the Association in raising the position of finance officer to a high professional plane.

The Municipal Bond Market

Recent sales of new issues from February issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$212,000	Wichita, Kans., Internal Improvement	2	5.33 Avg.	2.03
150,000	St. Paul, Minn., Public Welfare	2.20	7.75 Avg.	2.15
8,520,000	Fairfield Co., Conn., Parkway	1.75	1-15 Ser.	2.17
125,000	Eau Claire Co., Wis., Building Improvement	2.5	8 Avg.	2.34
175,000	Cattaraugus Co., N. Y., Highway Refunding	2.40	10.66 Avg.	2.56
120,000	Manitowoc, Wis., City Hall Addition and Police Station	2.5	1-20 Ser.	2.46
738,950	Columbus, Ohio, Refunding	3	8 Avg.	2.96
140,000	Wicomico Co., Md., School	3	15-18-Ser.	2.97
123,000	Somerville, N. J., Sewage Disposal	3	16 Avg.	2.98
450,000	Marlboro Co., S. C., Highway	3.25	9-18 Ser.	3.20
200,000	Arlington Co., Va., Sewer	4	25.85 Avg.	3.28
123,000	Torrence, Calif., Municipal Improvement District No. 1	4	16.16 Avg.	4.26

POWER CLEANERS

Atlantic City saves $4500.00 annually by using an OK Champion power sewer cleaner. Test one free of charge in your own city.

OK Champion also manufactures hand-operated sewer cleaning units as well as a complete line of strong, durable, floating sewer rods. Interesting literature and prices on request. Write today.

CHAMPION CORPORATION
4716-4740 SHEFFIELD AVENUE HAMMOND, INDIANA

KENNEDY

SAFETOP FIRE HYDRANTS

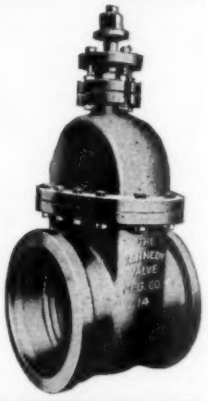
Extra large standpipes; simple, straight-line operating mechanism; smooth elbow and nozzle curves; specially long-wearing valve and gasket materials; flood-proof and frost-proof. The Patented Safety Breakable Section permits speedy, economical repairs if broken in a smashing collision.

NEW TYPE WATER GATES

Built to A.W.W.A. Specifications. All parts amply strong, with simple, positive and dependable operating mechanism. Built in sizes up to 60 in. and for manual, gear, electric motor, or hydraulic cylinder control.

Send for Bulletins

THE KENNEDY VALVE MFG., CO., Elmira, N. Y.



Portable floodlighting for every emergency

No city or town should be without a Homelite portable floodlighting unit. For at night, in case of electric power failures, fires, drownings, floods, riots or parties lost in the woods, a Homelite gives you handy and dependable floodlighting for emergency and rescue work.

Light and compact, the complete unit is easily portable. Yet despite its size, it generates as much as 1250 watts—enough to operate several brilliant floodlights. Furthermore, it is low in cost. In fact, so inexpensive that many cities have found it a good investment to have several units in their public service departments.

Get the complete story on these units. See what they can do for you. Write today for bulletin.

Complete unit, including built-in gasoline engine weighs only 80 pounds.

HOMELITE CORPORATION
203 RIVERDALE AVENUE, PORT CHESTER, N. Y., U. S. A.

The Standard
for more than
50 Years

Automatic Pressure Control Valves
•
Feed Water Filters
•
Hydraulic Engines
•
Portable Fire Hydrants
•
Hydraulic Booster Pumps

ROSS VALVE MFG. CO., INC.
ARCHIBALD STREET TROY N. Y.

Prepared by
FRANK B. WILLIAMS
Author of "The Law of
City Planning and Zoning"

Zoning and Planning Notes

From Data collected
by the Zoning Committee
of New York
(233 Broadway)

Board of Appeals—Variance for Practical Difficulties or Unnecessary Hardships

ILLINOIS.—*People ex rel. Kirby v City of Rockford*, 2 N. E. 2d, 842 (Supreme Court, June 10, 1936).—Marjorie L. Kirby is asking for a permit for the construction of a gasoline filling and service station, together with other business buildings, on her land in an "A Residential" zoning district in which such buildings are forbidden; and the Court finds that it should be issued to her.

The general scheme of a zoning ordinance may be valid, yet as applied to a particular property within the area zoned such facts may exist that if the terms of the ordinance are enforced it would result in an arbitrary and unreasonable injury to the owner of the property, or its confiscation. In that situation, as applied to such real estate, the ordinance is void.

By the testimony it appears that the property is worth for residence, to which the ordinance restricts it, from 30 per cent to 35 per cent of its value for business; and that on the basis of the 1933 assessment the entire value of the lots for residence purposes would be consumed by taxes and assessments in from six to ten years. There is evidence that the proposed buildings, if constructed on the lots in accordance with the plans, could be readily rented at a substantial rental.

It is proper to consider the extent to which the value of property has been diminished by the zoning ordinance for the purpose of determining whether it is unreasonable and confiscatory. It is apparent that the employment of the property for uses other than single-family residences would prevent its ultimate improvement or result in having residences there of only the cheapest type. Such restraint inflicts a drastic financial loss on the owner. On the record there is no connection between the destruction of values in this way and the public health, morals, safety, or general welfare. As applied to this property, therefore, the Court rules that the ordinance is unreasonable and void. (See Editor's Note following the next case.)

NEW YORK.—*Matter of Finn*, Supreme Court, Kings County, reported in *New York Law Journal*, January 19, 1937, p 308.—One Violet Kramer is the owner of property in a business district where as a rule gasoline filling stations are not allowed. She sold the property to the Bay Parkway Holding Corporation under an agreement to apply to the Board of Standards and Appeals for a variance of the letter of the Zoning Resolution to permit the erection of a gasoline filling station on the premises; and if she failed to obtain it, the contract of sale should be void. The Board granted the application; and this Court overrules this decision, holding the issuance of a permit for the filling station to be improper.

Violet Kramer's application for the variance was on the ground of practical difficulties or unnecessary hardships in carrying out the strict letter of the Resolution. At the hearing she showed that she became owner of the premises by the foreclosure of a mortgage amounting to about $3,500, and was selling them for $5,000. But the fact that a prohibited use will be of economic advantage to the owner is not a hardship or difficulty authorizing the Board to grant a variance. On this point the Court follows the well-known case of *Stillman v. Board of Appeals*, 222 App. Div. 19.

Such a variance may be granted when the particular piece of land in question is not suited to the use to which the Zoning Resolution assigns it. This may be shown by witnesses or, without witnesses, by the knowledge of the Board itself. And this fact must appear in the record of the decision of the Board; without which the Board has no power to grant the variance. This requirement is essential to justice; for without it the appeal from the decision of the courts by certiorari, granted by the statute, would be of no value.

To this effect the Court cites another well-known case, *People ex rel. Fordham Manor Reformed Church v. Walsh*, 244 N. Y. 280.

EDITOR'S NOTE.—To supplement this all too brief summary of this important case, the student unable to obtain a report of it should consult the Stillman and the Fordham Manor cases, above referred to. This case should be read with the Kirby case, above. Inadequate return from land devoted to a given purpose, although not, as such, a ground for a variance for practical difficulties or unnecessary hardships, often indicates that the land is not suited to that purpose, which may be a sufficient ground for the variance.

Zoning—Uniformity in a District—Garage

NEW YORK.—*Bowery Savings Bank v. Plymouth Colony Corporation*, Supreme Court, Queens County, reported in *New York Law Journal*, November 7, 1936, p. 1582.—The defendants, Plymouth Colony Corporation, and Harold Walters, obtained a permit from the town of Hempstead for the erection of a gasoline service station on a lot situated in a business zone. The zoning ordinance of the town provides, in subdivision 10 of section 701, that "a building may be erected, altered or used, and a lot premises may be used for any of the following purposes and for no other: . . . . (10) public or minor garage; sales service or repair shop; gas filling station, and battery and tire service station, when approved by the Town Board."

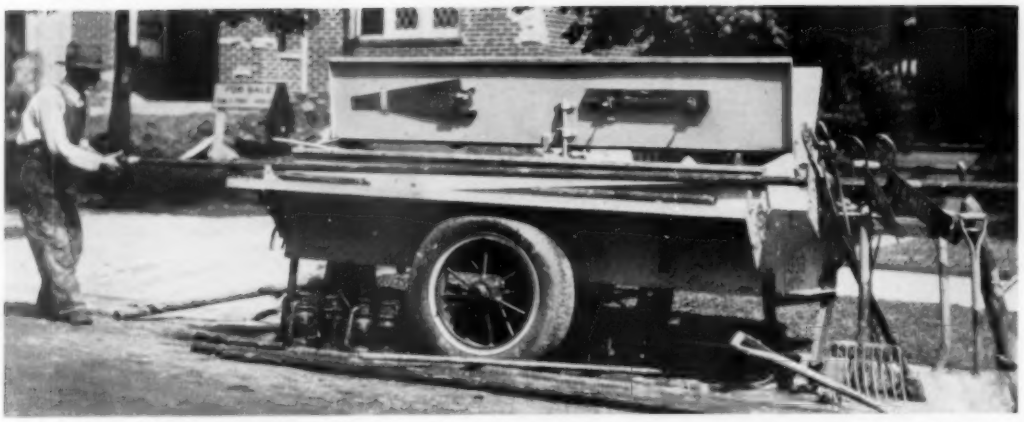
The plaintiff Savings Bank is the owner of land on a corner across from the proposed station. It claims that the fuel-vending business is detrimental to and will damage its property, and has brought suit to restrain the defendants from erecting the gasoline station. The Bank claims that section 10, quoted above, is void because the law requires that regulations shall be uniform for each class or kind of buildings throughout each district, and under section 10 there is not uniformity, because the issuance of permits is subject only to the personal and arbitrary power of the Town Board. The defendants move that this complaint be dismissed on the ground that it does not state a valid cause of action. This motion the Court, in this opinion, overrules, holding section 10 of the ordinance void and the complaint of the plaintiff bank well founded. The defendants argue that there should be discretion in the administration of zoning. This the Court admits; but the Town Board is not the body vested by law with discretion; and, besides, a grant of discretion, to be valid, must lay down rules for its use, or such grant will itself be open to the objection that it grants arbitrary power; and in this case no such rules were laid down.

EDITOR'S NOTE.—See the Maryland case of *Lugar v. North Baltimore Methodist Protestant Church*, in our Notes for July, 1932, with editor's note; and the Texas case of *City of San Antonio v. Zugheib*, in our Notes for August, 1934.

Decision of Board of Adjustment—Change of Conditions

NORTH CAROLINA.—*Application of Broughton Estate*, 185 S. E. 434 (Supreme Court, April 20, 1936).—In 1932 a permit for the erection of a filling station at a given location was denied by the Board of Adjustment. In 1935 a similar application was made. There was objection to the granting of the permit at this time on the ground that the Board had decided the case in 1932 and it could not be reopened and again decided. The evidence showed that traffic conditions have materially changed since 1932. The Court therefore holds that this change in conditions makes the 1935 case a different case from that in 1932, overrules the objection and grants the permit.

An index to the Zoning and Planning Notes published in THE AMERICAN CITY during 1936 will appear in the 1937 MUNICIPAL INDEX, now in press.



The LB HanDeeBox—A Workbench on the Job

This all-steel, trailer type tool box is just what highway and waterworks maintenance crews need. It has compartments for every tool, fitting, first-aid kit and foreman's record. Vandals can't steal your tools—in fact, it is just like a safe. The only way it can be opened is with the Yale-lock key provided. The HanDeeBox weighs only half as much as a wooden box; yet it is much stronger. It requires no maintenance. Will outlast two homemade tool boxes. Shelves all around outside make ideal work benches on the job. Ask for prices, now.

Ask for Bulletin L-6

LB — STEEL BOXES FOR EVERY PURPOSE — LITTLEFORD BROS. CINCINNATI, OHIO

LITTLEFORD
ALL-STEEL
TOOL BOXES

LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.

A Popular Swim Pool

contains water that is actually "pure enough to drink"—water that is crystal-clear and kept in circulation by continuous passing through a purifying unit. Graver Units have given dependable service for many years in some of the country's outstanding pools. They are easy and economical to operate, long lived.

If you are planning a pool, get the informative Graver book on Design, Construction and Operation of Modern Pools, sent free on request.

GRAVER TANK & MFG. CO., INC.

75 Years of Dependable Service

New York, N. Y. Chicago, Ill. East Chicago, Ind. Catasauqua, Pa.

GRAVER

Equal to "Jung Suction" AERO-MIX AERATOR-MIXER *Is the Claim of Some*

But Why

Patented

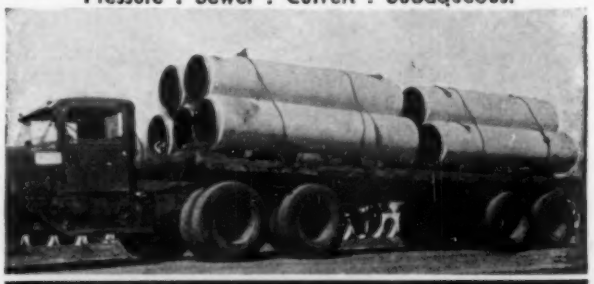
take chances on any—but the accepted standard. A patented aerator-mixer with a trade-mark registered in U. S. Patent Office to give you assurance you are getting *the* Aer-O-Mix that positively aspirates or inhales air or other gases in finely divided bubbles through multiple tubes—and provides, simultaneously, intimate mixing of liquid with chemicals or with other liquids. Gravity or motor-driven operation. Inside or outside installations. Small space requirements.

IN WATER, SEWAGE AND INDUSTRIAL WASTE TREATMENT

Write for new illustrated folder

Vogt Mfg. Co., Inc., Box 1122, Louisville, Ky.

Pressure : Sewer : Culvert : Subaqueous.



LOCK JOINT REINFORCED CONCRETE PIPE

LOCK JOINT PIPE CO. Est. 1905. Ampere, N. J.

The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for injury to pedestrian who stepped off plank detour into hole, the detour having been negligently constructed for traffic diverted from road in which city was replacing water main (Washington Supreme Court: *Shandrow v. City of Tacoma*, 62 Pac. 2d, 1090).

Statutory notice of injury to pedestrian due to defective sidewalk held void for failing to give claimant's address (Illinois Appellate Court: *Spencer v. City of Chicago*, 5 N. E. 2d, 618).

City held not liable for injury to municipal street-car passenger who sustained shock on pressing stop signal button, city having overcome any presumption of negligence arising from occurrence of accident (Louisiana Court of Appeal: *Bynum v. City of Monroe*, 171 So. 116).

Prisoner injured through negligence of boss at rock quarry held without valid damage claim against city, whose operation of quarry was a governmental function (Tennessee Supreme Court: *Howard v. City of Chattanooga*, 98 S. W. 2d, 510).

City held liable for injury to shopper in municipal market if due to negligent maintenance of passageway (Maryland Court of Appeals: *Reed v. Mayor and City Council of Baltimore*, 188 Atl. 15).

City held liable for injury to automobile occupant due to rough condition of street crossing over railroad tracks, although city claimed that railroad was chargeable with maintenance of the crossing. (California Supreme Court: *Shea v. City of San Bernardino*, 62 Pac. 2d, 365).

City held not liable to pedestrian who stumbled over cement block on grass parkway near sidewalk (Georgia Court of Appeals: *Emory v. City of Rome*, 188 S. E. 358). But evidence held sufficient to warrant recovery by woman whose foot caught in drain-pipe hole near edge of sidewalk (North Carolina Supreme Court: *Doyle v. City of Charlotte*, 188 S. E. 322).

Statute making counties liable for injuries on defective bridges held inapplicable to highway bridges erected by railroads (Georgia Court of Appeals: *Jackson v. Meriwether Co.*, 188 S. E. 280).

Although a 4-inch depression in a sidewalk did not in itself necessarily constitute such defect as to render a village liable for injury to a pedestrian who was tripped by it, its concealment by recent snowfall could be found to constitute such trap as to render the village liable for the accident (New York Supreme Court, Appellate Division: *Tetzlaff v. Incorporated Village of Amityville*, 291 N. Y. Supp. 65).

Bond Issues

Where water-works and sewerage systems were essentially one, held that submission to the electors of a proposition to issue bonds to extend the systems was not void as improperly combining two separate propositions (Louisiana Supreme Court: *Humphreys v. City of Jennings*, 171 So. 41).

Statute limiting time within which another bond election might be held after rejection of proposal by electors held inapplicable where previous election was abortive for lack of sufficient vote on question (Florida Supreme Court: *Dixon v. City of Miami*, 170 So. 845).

Bonds providing for their redemption before maturity but not specifying method of notice of call held callable on reasonable notice, which was provided in a validating decree which directed 30 days' notice in newspapers published in the issuing city, New York and Chicago (Florida Supreme Court: *State v. City of Tallahassee*, 170 So. 897).

Civil Service

Fire chief held reducible to rank of captain in interest of economic administration and on city's adoption of city manager plan (New Jersey Supreme Court: *Taggart v. City of Asbury Park*, 188 Atl. 490). Same Court also approved reduction of first-grade firemen to second-grade in same city (*Johnston v. City of Asbury Park*, 188 Atl. 492).

Condemnation Proceedings

Borough held not entitled to condemn for street opening land held by village for future extension of sewage system, in absence of express statutory authority for such condemnation (New Jersey Supreme Court: *Village of Ridgewood v. Borough of Glen Rock*, 188 Atl. 698).

Contracts

City retaining electric plant under contract invalid only because providing for payment in an unauthorized manner held bound to either restore the plant to the contractor and reimburse against depreciation or to pay the fair value of the plant (United States Circuit Court of Appeals: *Fairbanks, Morse & Co. v. City of Wagoner*, 86 Fed. 2d, 288).

Contract employing engineer to investigate water rates held not within statutory requirement for competitive bidding (United States Circuit Court of Appeals, Second Circuit: *Potts v. City of Utica*, 86 Fed. 2d, 616).

In determining the "lowest" bid to construct a plant, etc., held that operating economy, as well as initial cost, may be considered (Pennsylvania, Court of Common Pleas, Allegheny County: *White v. City of Pittsburgh*, 28 Pa. Munic. Law Rep. 92).

Elections

Where a sufficient petition for a local liquor option election existed, election held not vitiated because it was not filed before the election was called. Unless there is a statutory requirement as to form of ballot, any form that apprises electors as to proposition voted on held sufficient (Louisiana Supreme Court: *Drew v. Town of Zwolle*, 171 So. 59).

Licenses

No invalid discrimination against non-resident auctioneers charged $50 per day held involved where Tampa ordinance charged residents $250 per year (Florida Supreme Court: *Freeman v. Tittsworth*, 171 So. 307).

Although occupational tax was illegal, judgment for refund by city held improperly to include interest (Ohio Court of Appeals, Hamilton County: *Early & Daniel Co. v. City of Cincinnati*, 5 N. E. 2d, 409).

Ordinance imposing fee of $15 per day for peddling farm products, etc., produced by others, and exacting $500 bond, held void as being unreasonable and oppressive (Maine Supreme Judicial Court: *State v. Brown*, 188 Atl. 713).

Ordinance regulating vehicles carrying food products and imposing $25 annual license fee—later reduced to $15—upheld against complaint of non-resident (Illinois Appellate Court: *City of Troy v. Holten*, 4 N. E. 2d, 881).

Mandamus Proceedings

Citizen showing no special interest held not entitled to maintain suit to compel municipal officers to prosecute offenders against anti-gambling laws and ordinances (Louisiana Court of Appeal: *Jumonville v. Hebert*, 170 So. 497). But a contrary conclusion was reached by the New York Supreme Court, Chemung County, in *Carmody v. City of Elmira*, 290 N. Y. Supp. 1021, where citizens' application for mandamus to compel enforcement of an ordinance requiring bowling-alley licenses was denied on the ground that the municipal officers had not wilfully refused to enforce the ordinance.

Parks

Statutory power of a city to acquire property for "parks" held to authorize acquisition for a golf course, and city could be compelled to carry out contract therefor (Iowa Supreme Court: *Golf View Realty Co. v. Sioux City*, 269 N. W. 451).

Public Utilities

Street railroad's rights held not violated by 3 per cent gross income tax, although it is also required by franchise to pay city 5 per cent of gross receipts (United States Circuit Court of Appeals, Second Circuit: *Southern Boulevard Railroad Co. v. City New York*, 86 Fed. 2d, 633).

Ordinance requiring public utility to pay amount equal to unpaid paving assessment on abutting property, to be used in cancelling assessment, as condition to privilege of opening pavement held void both as unreasonable exercise of control over streets and as an attempt to exact a fee for private benefit (Wisconsin Supreme Court: *Wisconsin Telephone Co. v. City of Milwaukee*, 270 N. W. 336).

Sewers

City held not liable to owner of land along stream for discharging raw sewage into stream, in the absence of statute authorizing suit (South Carolina Supreme Court: *Oates v. City of Easley*, 188 S. E. 504).

Street Improvements

Highway in suburb, designated on plat and improved as boulevard, held to remain a boulevard on annexation to city, and therefore abutting property was not subject to assessment for street paving, under charter provision (Michigan Supreme Court: *Abar v. City of Detroit*, 270 N. W. 277).

Liens against abutting property for street widening and liens for paving the widened street held equal, entitling all the lienholders to share pro rata on proceeds of the assessed property proving insufficient to pay both classes of liens (Texas Court of Civil Appeals: *Uvalde Construction Co. v. City of Dallas*, 99 S. W. 2d, 644).

Streets

Location of state highway on street through city, with view to avoidance of congested traffic, upheld (Florida Supreme Court: *Morrison v. Farnell*, 171 So. 528).

Taxation

Sales tax law held not applicable to gas and electricity sold by municipalities (Michigan Supreme Court: *City of Wyandotte v. State Board of Tax Administration*, 270 N. W. 211).

Tax assessment against "L 1 Blk 1 Bus Sec in the City of *Tampashores*," etc., held not invalid for want of sufficient description of property (Florida Supreme Court: *Broadwater v. City of Tampashores*, 170 So. 657).

Traffic Regulations

Miami parking meter ordinance, applicable in such zones "as traffic conditions require," upheld (Florida Supreme Court: *State v. McCarthy*, 171 So. 314).

Traffic Signals

City held powerless to grant permit to advertising company to maintain "Stop," "Slow," and "School" traffic signals on the reverse side of which were placed private advertising signs (Kansas Supreme Court: *State v. City of Hutchinson*, 62 Pac. 2d, 865).

Venue

Suit against city on money obligation held maintainable only in the county in which city was located (Montana Supreme Court: *Lillis v. City of Big Timber*, 62 Pac. 2d, 219).

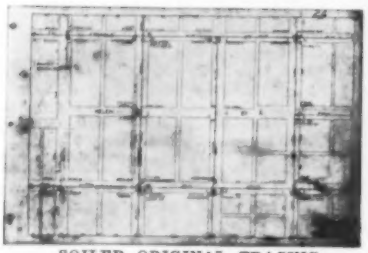
Workmen's Compensation

City held liable for award under workmen's compensation act for death of policeman killed outside city while assisting state and Federal officers in making arrest (Virginia Supreme Court of Appeals: *City of Alexandria v. McClary*, 188 S. E. 158).

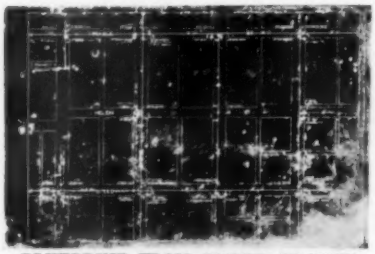
WATER RUINED TRACINGS

OLD, SOILED AND DIRTY INK TRACINGS FROM WHICH BLUEPRINTS CANNOT BE MADE OR READ

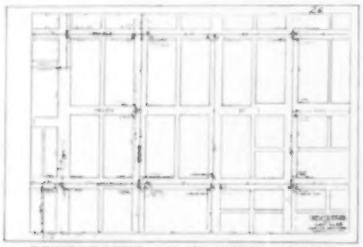
SAVE THE HIGH COST OF RE-DRAFTING THEM!



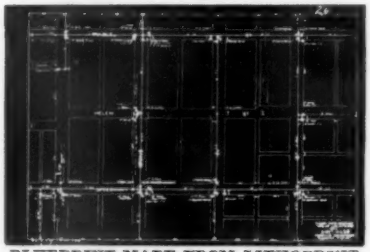
SOILED ORIGINAL TRACING



BLUEPRINT FROM SOILED TRACING



LITHOPRINT ON TRACING CLOTH MADE FROM ABOVE TRACING



BLUEPRINT MADE FROM LITHOPRINT

LITHOPRINT THEM ON TRACING CLOTH AND OBTAIN DUPLICATE TRACINGS at a cost slightly more than the cost of the actual tracing cloth.

LITHOPRINTS eliminate all imperfections on the original, they are true to scale and require little or no retouching.

Get Our Estimate on Your Requirements.

LITHOPRINT
COMPANY OF N. Y., INC.
41 Warren Street
New York N. Y.

Easy to use

A plank that should be in every city's platform:

REDUCE LITTER!

A tremendous help in keeping parks and streets free of unsightly rubbish is the placing of—

SOLAR Self-Closing RECEPTACLES

at convenient locations, wherever crowds gather. They are *easy to use, easy to empty,* and *they outlast other types of cans* because the easily removed inner bags save wear and tear on the cans.

Give them a trial! Start with two or three—unless your City is one of the hundreds already using SOLARS.

Description and prices upon request.

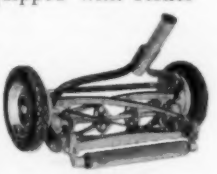
Many public buildings, too, are now using SOLAR RECEPTACLES to reduce litter, both inside and outside the buildings.

SOLAR-STURGES MFG. CO.
Melrose Park, Illinois

Easy to empty

"The COLDWELL AMBASSADOR DELUXE is the Easiest Operating of Them All."

. . . Is the verdict of users everywhere. A quality medium-weight mower, ideal for general all-purpose use. Equipped with Roller bearing wheels and Goodyear pneumatic tires and rubber covered guard roller on ball bearings. Write for details.



COLDWELL LAWN MOWER COMPANY
DEPT. C—NEWBURGH, N. Y.

We grow a complete assortment of Northern-grown specimen Trees—Shrubs—Evergreens and other ornamentals for Park, Streets, and Municipal plantings.

Consultations and inquiries invited

PONTIAC NURSERIES
ROMEO, MICHIGAN

Municipal and Civic Publications

Prices quoted do not include postage, unless so stated

Police

The Police and Modern Society.—By August Vollmer, Professor of Police Administration, University of California. University of California Press, Berkeley, Calif. 1936. 253 *pp.* $2.50 *from* THE AMERICAN CITY.

Professor Vollmer writes from 30 years of practical experience in all lines of police duty and gives us the real facts of police problems. The language is not technical and the book is good reading for the plain citizen who wants to get information on the police service, as well as a fine text for beginning-students in police training schools, where it is already being used in the West. All theorizing is carefully avoided, and all practical and modern scientific methods of police service are carefully considered. Mr. Vollmer clears the haze and shows us just where the police and modern society stand in a coordinated effort to prevent crime.

Water Purification

The Ohio Conference on Water Purification has just published its Annual Reports of the conferences of 1932, 1933 and 1934 in a single pamphlet of 135 pages. Since this conference is limited geographically, most of the papers and discussions center around actual experience with certain problems of water purification in several Ohio municipalities. As a record of practical experience, this pamphlet should be useful to those engaged in water purification in any part of the country. (Apply to the Ohio Conference on Water Purification, Room 302, Depts. of State Bldg., Columbus, Ohio.)

Electricity

"A History of Electric Service in Detroit," by William H. Lane, shows the development of electric service in this city from 1870 down to the present time. The story is similar to that of many other cities except that the Detroit Edison now differs from some enterprises in being an independent company, managed locally from the beginning, and not a part of any "holding company" system. This tale of industrial adventure and progress is colorful and interesting, and the facts of operation costs and methods are presented critically without bias. 86 pp. (Apply to the Detroit Bureau of Governmental Research, Inc., 5135 Cass Ave., Detroit, Mich.)

Urban Land Policy

The City Plan Commission of Saint Louis, Mo., has made a study of land use and population shifts in this city and has published a 27-page report entitled "Urban Land Policy." Some of the disclosures are alarming and prove the question of land use to be very close to the heart of a city's economic structure. Like many other cities, St. Louis exhibits a shift of population to accommodations outside the city limits. Simultaneously, land values in the old central areas are declining, and buildings are being demolished to save taxes and are not being replaced. The logical conclusion of any such trend would engulf the city and bring about its economic and social collapse. To prevent this tragedy of the future, the City Plan Commission urges a constructive urban land policy. Nine specific points of reform are recommended: revision of zoning regulation; strict enforcement of sanitary and fire laws; elimination of the smoke nuisance; enactment of a minimum housing standards ordinance; repair and renovation of good old structures; removal of obsolete structures; development of neighborhood units; construction of several large-scale, low-cost housing projects in the older sections of the city; and continued maintenance of a high standard of building code regulations. The difficulties of St. Louis are not peculiar to this city alone, and this challenge might well be taken as country-wide. (Apply to the City Plan Commission, Tom A. Gilmartin, Secretary, St. Louis, Mo.)

Planning

City Planning. Housing, Vol. II.—By Werner Hegemann, edited by Ruth Nanda Anshen. Architectural Book Publishing Co., Inc., New York. 1937. *xxii* + 173 *pp.* $3.75 *from* THE AMERICAN CITY.

To lose Werner Hegeman with his idealism, his rich practical experience, his strength and charm, was indeed a tragedy in these formative years of the science of planning. No one man in the planning field had a broader experience on which to judge without prejudice the problems of any locality in any nation. He served in many parts of the globe as student, teacher, and practical planner. His insight penetrated deep into the whole significance of planning as the only basis upon which civilization can meet its crises and further progress.

The second volume of his proposed three-volume work has been posthumously published through the efforts of his friends. Under the subtitle "Political Economy and Civic Art" Mr. Hegeman continues his searching analysis of the planning and housing problems of the United States in a world setting and recommends a path along which we must proceed to solve these problems. Planning must henceforth become the government mode of thought. The nine chapters included in this volume are entitled: "A Comparison of Paris and Berlin"; "Foreign Examples—Paris"; "Political Economy in German Housing"; "Political Economy in American Housing"; "Slum Fires"; "Immediate Necessities in Planning and Housing"; "Civic Art"; "Origin and Goal of America's New Civic Art"; "Washington, Williamsburg, The Century of Progress, and Greendale."

Traffic Safety Surveys

The National Bureau of Casualty and Surety Underwriters has published a full explanation of "Traffic Safety Survey Procedure." Before the practical details in the making of a traffic safety survey are outlined, several words of caution are given for the benefit of any community contemplating such an undertaking. First of all, to undertake a traffic survey without the backing of the local safety committee or council would be fruitless, for that organization is indispensable in the matter of selling new recommendations. A second caution is that the survey be practical and make suggestions within reach of the community. Third, it is most effective to put the major recommendations into effect before the final report is written. Fourth, it is wise to attack one study at a time and issue piecemeal reports of a short, readable nature. Finally, the survey director must remember that a traffic survey can be based only on accident facts. It is suggested that the services of a traffic consultant be engaged to aid in the final analysis of the survey findings if the survey director is limited in traffic experience. 80 pp. (Apply to the National Bureau of Casualty and Surety Underwriters, 1 Park Ave., New York.)

Driver-Asleep Accidents

"How long on the Highways" is a study of the effect of exhaustion and drowsiness on traffic accidents. Available reports indicate that 530 fatal and 3,000 additional personal-injury accidents killed 730 and injured 4,700 people in 1935 from this cause. This is probably about one-third of the story. The rate of fatalities is twice as high as in other accidents, and the driver himself rarely escapes. Every third driver-asleep accident involves a truck. Investigation of the hours of sleep of the drivers in these accidents shows that they usually have not had enough sleep to insure alertness. This publication goes into the habits and hours of the general run of truck drivers and demonstrates that a large proportion of them are on duty without normal rest. Some states have made some attempt to regulate truckers' hours, but regulations have not been enforced well enough to produce a measurable effect. 31 pp. (Apply to the National Safety Council, 20 N. Wacker Drive, Chicago, Ill.)

Schools

Elementary School Building Score Card and Survey Manual.—By N. L. Engelhardt. Bureau of Publications, Teachers College, Columbia University, 1936. 48 *pp.* 50 *cents.*

School boards and school executives are concerned constantly with the adequacy of the existing school plant. Judgment concerning this adequacy ought not to be made by a mere cursory examination of the building but with due reference to all the features of the building and its true adaptability to educational need. The study of school buildings will always constitute an important part of the work of these executives. Dr. N. L. Engelhardt, of Teachers College, Columbia University, has developed a survey manual which is intended for use in this very detailed analysis of elementary school buildings. This survery manual is designed to serve boards of education, school superintendents, and school principals in making a survey of school buildings.

The survey manual is so set up that constant reference is made to desirable elementary school standards. The character of every aspect of the building is determined in its segregation as well as in its relationship to the complete school building. The manual has developed out of the many surveys which the author has made of school buildings throughout the United States. It is the outgrowth of a definite need and should serve the purposes of those seeking to discover the condition of the school plant and the necessary remedies for its improvement.

The Strayer-Engelhardt Score Card for Elementary School Buildings is also included in this document, making the rating on this 1,000-point score card possible as a result of the detailed study of the workers.

Water Conservation

"The University and Conservation of Wisconsin Waters" is the title of the November, 1936, *Bulletin of the University of Wisconsin.* It is the second in a series of Science Inquiry bulletins which will bring together into a series of correlated research programs all the work being done through the University on various problems in various fields, making possible a real evaluation of this work. Wisconsin is richly endowed with water resources which should be used widely and wisely. This bulletin outlines the problem of water conservation, presenting studies of "Surface Water Resources," "Water for Human Consumption and Industrial Use," "Organic Pollution of Waters," and "Wisconsin Lake Investigations," discouraging waste but encouraging use and enjoyment; indicates lines for further research on the subject; and shows what facilities are available at the University of Wisconsin to students of water resources. 79 pp. (Apply to the University of Wisconsin, Madison, Wis.)

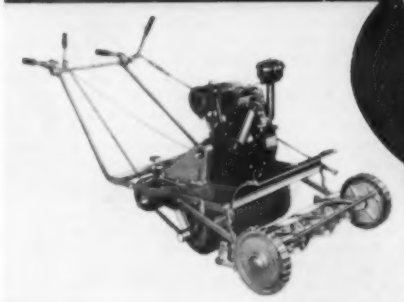
Tax Limits

There has been considerable controversy over the matter of tax limitation during the past few years, and a new study by A. Miller Hillhouse, of the Municipal Finance Officers' Association, and Ronald B. Welch, of the National Association of Assessing Officers, is more than welcome. "Tax Limits Appraised" summarizes the development and growth of the over-all tax limitation movement and presents the arguments for and against tax limitation. The viewpoint is nation-wide, with attention focused on the proposal of the National Association of Real Estate Boards for a constitutional over-all limit of one per cent. The experience to date of eight states with over-all limits is carefully examined, and although the data are confessed to be somewhat meager for an impartial approach, the two authors make no bones about judging the evidence to be against tax limitation. This study should be helpful to any state or municipality contemplating research on this subject for its own purposes. 40 pp. 50c. (Apply to Public Administration Service, 850 E. 58th St., Chicago, Ill.)

More Cutting in Less Time with IDEAL MASTER

The Ideal Master has established a record for economy and durability that is worth investigating. It has been the first choice of municipal and park authorities for years. Sturdily built for hard use yet flexible enough to meet any requirement, the Master is equipped with a powerful, high-speed engine that furnishes a wide range of operating speed. Power is applied through the twin disc clutch by chain drive to the traction rollers. Cutting unit, mounted ahead of the roller is attached to the frame by side arms that leave the unit free to follow ground contours. The complete Ideal catalog should be in your files. Write for it, today.

For large open areas or around the edges, use IDEAL VICTOR



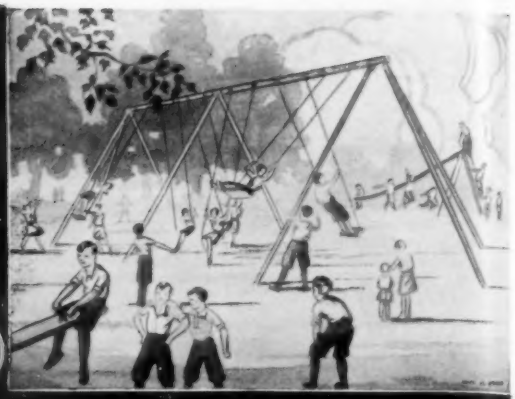
Whether the going is hard or easy Ideal Victor can handle the cutting job easily. Sturdily built and equipped with a powerful engine it has ample capacity for large areas. Light in weight it handles easily around trees, flower beds, walks, roadways, etc. Write for complete information.

IDEAL POWER LAWN MOWER CO.
400 Kalamazoo Street, Lansing, Michigan

New York Branch:
12 Harrison Street, New Rochelle, N. Y.

Canadian Distributors:
Aikenhead Hardware Ltd., 17 Temperance St., Toronto, Ont.

MEDART PLAYGROUND APPARATUS



Write for Playground Apparatus Catalog P-3

When Swings, Slides, Giant Strides, See-Saws and all the other equipment available for modern play-yards, claim your attention—consider MEDART PLAYGROUND APPARATUS—especially if safety, service and durability concern you most. . . . Sixty-two years of manufacturing experience is reflected in every piece of MEDART *Tested* APPARATUS. . . . Let us help you plan your playground.

Consult with "MEDART" when considering Gymnasium Apparatus, Basketball Backstops, Swimming Pool Equipment, Steel Lockers, Wardrobes, Cabinets or Shelving. Catalogs on request.

FRED MEDART MANUFACTURING COMPANY
3536 DeKalb Street » » » St. Louis, Mo.
Sales Engineers in all Principal Cities—Consult your Telephone Directory.

BRING ON THE TOUGH ONES

WEEDS don't come too tough for Dolge Weed-Killer. It eradicates the hardiest ones: poison ivy, thistles, crab grass, burdock, Johnson grass, and many others. Powerful: dilutes 1-to-40 for ordinary growth. Sprinkles weeds away—and one application is usually enough for the whole season. Details on request—send for new 1937 Dolge Ground Maintenance Manual, no charge.

THE C. B. DOLGE COMPANY
MAIN OFFICE AND LABORATORIES WESTPORT, CONNECTICUT

Play Safe with

EverWear

Safety
PLAYGROUND APPARATUS

SAFETY is an essential of every outfit
DURABILTY is built in to give longer life
Write for Catalog 28

For Beach and Swimming Pool Equipment, write for Catalog 28W

THE EVERWEAR MANUFACTURING CO.
The World's oldest and largest exclusive makers of playground, beach and pool apparatus.
SPRINGFIELD, OHIO

Public Speaking

"Going to Make a Speech?"—By E. St. Elmo Lewis, Counsel in consumer and trade relations. The Ronald Press Co., New York, 1936. xviii + 359 pp. $3.00 *from* THE AMERICAN CITY.

Most people have occasion to make a speech at least once in their lives, and the consequent opportunity to do themselves credit or discredit. Mr. Lewis has done a great deal of speaking before many different types of audience, and is well qualified to offer practical suggestions to the novice in meeting every situation, from the graceful decline of an invitation to the facing of the most unsympathetic audience. He feels that the central and simplest conception of a speech is the selling of ideas. Mr. Lewis analyzes the many different types of audience, their attitudes and their expectations, and tells how to prepare the speech and the speaker for every occasion.

Public Utilities

"Municipal Ownership of Electric Undertakings in Virginia," by Rowland Andrews Egger and James Edward Gates, is a valuable contribution to the study of the management of municipal electric plants. The study is entirely objective, there being no motive of bolstering or undermining public ownership of utilities, but only that of inquiring into and criticizing constructively the management of this phase of the public service. There are seven sections to the report, with the explanatory titles: "History and Development of Municipal Ownership in Virginia"; "Law of Municipal Ownership in Virginia"; "Administrative Organization and Management"; "Financial Policies of Municipal Electric Undertakings"; "Rate Levels and Rate Structure"; "Regulation by the State Corporation Commission as an Aid to Efficient Operation"; and "Summary and Conclusions." A number of the conclusions reached should be very helpful to local plant managers in showing them how they stand and where they can best improve their administration. One shortcoming of serious nature is the totally inadequate methods of accounting and financial reporting in some of these public concerns. A second criticism is that in spite of their low rate record in comparison with private companies, public companies are treated too much as money raisers for the government rather than as a medium for furnishing cheaper electricity to improve the standard of living of the domestic consumer. The writers of this study feel strongly that after a regular tax payment to the government, public utility plants should have no other aim than to lower rates as much as possible through efficient management and to educate the consumer to use electricity in as many ways as feasible. xx + 132 pp. $1.00. (Apply to the Division of Publications of the Bureau of Public Administration, University, Virginia.)

Safety

The Transactions of the Twenty-Fifth National Safety Congress, 1936 are published by the National Safety Council in two volumes. The first volume covers the general problem of safety, the various special subjects of fire protection, industrial health, safety equipment, etc., and special sessions on certain industries such as aeronautics, cement, chemistry, construction, railroads, etc. The papers have been edited to eliminate any extraneous matter but not in any way to injure the technical aspects of any address. Vol. I. 537 pp. (Apply to National Safety Council, Inc., 20 N. Wacker Dr., Chicago, Ill.)

Nursing

"Our Nurses" is a new publication of the Bureau of the Department of Health, New York City. It is actually a continuation of the former mimeographed "Health Sentinel." It will be published five times each year, and its aim is that of an information bulletin on nursing activities, for the nursing staff and for professional groups. All the various phases of the Health Department in which the public nurses participate will receive attention. The first issue is 4 pages in length and has an article on the progress of the Nursing Bureau during its 35-year existence, and two short articles on tuberculosis. On the last page we find news items and book notes. (Apply to the New York City Health Dept., Bureau of Nursing, Amelie H. Grant, R. N., Director, 125 Worth St., New York.)

Plumbing

Plumbing Engineering.—By Walter S. L. Cleverdon, Supervisor of Property, New York University. Published by Pitman Publishing Corporation, New York. 1937. 464 pp. Tables, diagrams and illustrations. $3.50 *from* THE AMERICAN CITY.

Aiming to combine scientific and technical knowledge with practical experience, the author has covered the subjects which the modern master plumber should know in order to be fully conversant with the wider aspects of his trade. Following a preface in which are recorded abbreviations and useful equivalents, the first part of the book deals with water supply; the hydraulics and pneumatics of plumbing; the effect of various chemicals on plumbing; water, sewage and drainage pumps; water supply piping for buildings; selection, installation and maintenance of water meters; types of tanks; distribution systems and appurtenances. Part II is devoted to the removal of sewage from a building; contract documents and specifications; and private or independent sewage plants. Part III deals with the newer phases of plumbing, including refrigeration, modern drinking water systems, water softening, summer camp sanitation, heating and ventilating, and air conditioning, and a final chapter on estimating. This is a book which should be in the hands of every building official and inspector.

Public Works Planning

The National Resources Committee has recently transmitted a report on "Public Works Planning" to the President. The report is the result of special investigations by the Water Resources Committee on drainage-basin problems and programs, by the Projects Division of the Federal Emergency Administration of Public Works on a six-year program of Federal construction, and by a special research staff on division of costs of public works. The final outcome of these investigations is a series of recommendations of policy on planning and programming, particularly in regard to a national water plan and program, and on developing a long-time public works policy related to business cycles or other crises. Procedures are laid down to simplify the selection of projects, timing of their construction and division of costs. Three suggestions are made for the administrative set-up necessary to long-time public-works plans: a national development agency or public works authority; a panel of appraisers under this agency for allocation of costs; and a fiscal advisory committee to adjust public-works programs to the national needs for economic stabilization. x + 221 pp. 60c. (Apply to the Superintendent of Documents, Washington, D. C.)

Billboards

The Massachusetts Billboard Law Defense Committee has prepared a new "By-Law for Billboards" which it recommends for passage by all Massachusetts towns. The By-Law is especially designed to conform to the Massachusetts state laws and regulations for outdoor advertising which have been declared constitutional. It is important that the towns of the state take advantage of this opportunity and protect their residential districts by an appropriate adaptation of this By-Law. The "model" gives definitions, general and specific prohibitions and restrictions, and a plan for administration and enforcement. 4 pp. (Apply to the Massachusetts Billboard Law Defense Committee, 3 Joy St., Boston, Mass.)

Public Works

Princeton, N. J., has issued a first annual report on public works. Monthly reports have been required for some time, but the new Superintendent of Public Works, the former Sanitary Engineer with a new duty, has supplemented the monthly reports by an annual report for 1936 covering in detail the activities of the year. At the outset this report makes 29 recommendations of policy and action for the city based on a year's experience of the Department. These recommendations range over a new definition of duties for the Public Works Department, improved tree surgery, nuisance ordinances, revision of the zoning ordinance, a sewer survey and many other projects. The remainder of the report lists the duties and concerns of the Department and notes the progress on each during the year. 34 pp. + maps. (Apply to I. Russell Riker, C.E., Department of Public Works, Princeton, N. J.)

Trailers

"The House Trailer, Its Effect on State and Local Government" is a 32-page report on this subject by the American Municipal Association in cooperation with the American Public Welfare Association, the American Society of Planning Officials, and the National Association of Housing Officials. The phenomenal growth in the manufacture and use of trailers has suddenly awakened our cities and towns to the fact that they have a new set of problems on their hands. The four organizations which have cooperated in preparing this report on governmental experience with trailers up to January 1, 1937, have done so as a result of many requests from public officials for information and advice. The pamphlet contains three chapters: "The Effect of the Trailer Upon Government," which deals with the problem of the welfare of migrating citizens, and the need for intelligent regulation, and which points out the governments' lack of experience in dealing with trailers; "Trailers as Seasonal Dwellings," which discusses Federal, state, county and municipal provisions and regulations relative to trailers and camps; and "Trailers as Permanent Dwellings," which discusses the possibility and desirability of the use of this type of housing by itinerant and stationary workers. Four appendices present the Orchard Lake (Mich.) decision requiring a trailer to move because it did not conform to the housing code of the town, ordinances of Miami, Fla., and San Diego, Calif., a chart of the trailer facilities provided in national parks, and an attached list of state regulations of house trailers. (Further mention of this report will be found on p. 111.) 50c. (Apply to the American Municipal Association, 850 E. 58th St., Chicago, Ill.)

Traffic Engineering

The "Proceedings of the Seventh Annual Meeting of the Institute of Traffic Engineers" is a compilation of résumés of the papers and reports presented at the meeting held in Atlantic City, N. J., from October 4 to 6, 1936. The subjects covered include highway planning, methods of preparing traffic safety surveys, mechanical traffic counters, safety zones, education of officers and drivers, new control signals and highway lighting. 275 pp. $1.00. (Apply to the Institute of Traffic Engineers, 1 Park Ave., New York.)

Housing

The New York City Housing Authority has added something new to the field of housing literature by its publication of a table of housing logarithms or "Rent Tables." Given a certain capital cost, a certain subsidy, a certain interest rate and a certain amortization period, turn to the right page and, presto, there will be a neat calculation of the net monthly rent per room. There are two sections of this set of tables, the first showing the reflection on rent per room per month of various capital subsidies with varying interest and amortization rates on different total capital costs, and the second showing the reflection on rents of various interest and amortization rates on different total capital costs but without capital subsidy. The formulae employed in setting up these tables are given, and a simple explanation of the technique of using the tables is also provided. (Apply to the New York City Housing Authority, 10 E. 40th St., New York.)

Other Reports Received

CINCINNATI, OHIO.—Annual Report, Cincinnati Metropolitan Housing Authority, 1936. 7 pp + maps and charts.

KANSAS.—"Social Welfare Service in Kansas, 1936." The Kansas Emergency Relief Committe, Topeka, Kans. 123 pp.

MANSFIELD, MASS.—Annual Report, year ending December 31, 1936. 176 pp.

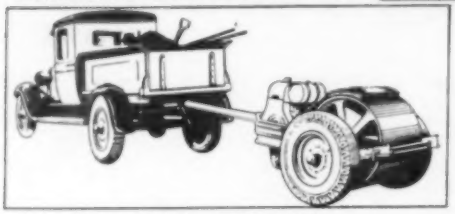
MICHIGAN CITIES—"Assessed Valuations, Tax Rates, Levies and Collections, 1936." Michigan Municipal League, Ann Arbor, Mich. 7 pp.

MICHIGAN VILLAGES.—"Assessed Valuations, Tax Rates, Levies and Collections, 1936." Michigan Municipal League, Ann Arbor, Mich. 8 pp.

SUFFOLK COUNTY, N. Y.—"Report of the Suffolk County Mosquito Extermination Commission, Ending October 31, 1936." 23 pp.

TOPSHAM, VT.—Annual Report, 1937. 32 pp.

ANNOUNCING A MOTORIZED WHEELED ROLLER

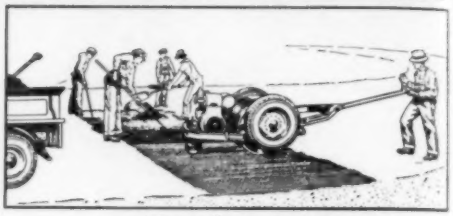


To and from the Job
a High-speed Trailer

MODEL 135
COMPRESSION 135 LBS. PER INCH OF CONTACT

The most economical and efficient Roller for all types of patch work and miscellaneous small jobs.

Write for DETAILS!



On the Job
a Self Propelled Roller.

The WHEELED ROLLER Corp. ★ SAN ANTONIO, TEXAS

WHY... ... DELAYED ALARMS?

Fire destroys life, property, established business, profits, and taxable valuations.

The greatest contributing factor is delayed alarms.

The remedy is a fire alarm system with adequate box distribution. The cost is negligible in comparison with the annual fire waste due to the absence of such protection.

Responsibility for public safety is inherently a part of the obligation assumed by public officials in accepting the call to duty—yet leading authorities admit that fire alarm is the most deficient of municipal fire defenses.

We will freely cooperate in planning adequate fire alarm protection for your community.

THE GAMEWELL COMPANY
NEWTON UPPER FALLS
MASSACHUSETTS

IS YOUR CITY PROPERLY NUMBERED?
Write for illustrated 16-page catalog No. 36-A
PREMAX SALES DIVISION, CHISHOLM-RYDER CO., INC., NIAGARA FALLS, NEW YORK

ARE YOU INTERESTED IN RECEIVING FREE LITERATURE

on any kind of municipal equipment or supplies? See pages 21 and 23 for a list of valuable booklets to be had for the asking.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

MARCH 11-12.—TRENTON, N. J. (200)
New Jersey Sewage Works Association. Annual meeting. (Stacy-Trent Hotel.) Secretary, John R. Downes, Bound Brook, N. J.

MARCH 17-19.—ATLANTIC CITY, N. J.
New Jersey Mosquito Extermination Association. Annual meeting. (Hotel Chalfonte-Haddon Hall.) Secretary, Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

MARCH 18-20.—LAWRENCE, KANS. (140)
Kansas Water and Sewage Works Association. Annual conference. (University of Kansas.) Secretary-Treasurer, E. Boyce, State Board of Health, Lawrence, Kans.

MARCH 18.—BOSTON, MASS.
New England Water Works Association. Annual meeting. (Hotel Statler.) Secretary, Frank J. Gifford, 613 Statler Building, Boston, Mass.

MARCH 21-23.—HOUSTON, TEXAS. (200)
Southern Commercial Secretaries' Association. Annual meeting. Secretary-Treasurer, Stanley Draper, Chamber of Commerce, Oklahoma City, Okla.

MARCH 25-26.—INDIANAPOLIS, IND.
American Water Works Association—Indiana Section. Annual meeting. (Antlers Hotel.) Secretary-Treasurer, J. A. Bruhn, Indianapolis Water Company, Box 855, Indianapolis, Ind.

MARCH 30-APRIL 1.—OCALA, FLA.
American Water Works Association—Florida Section. Annual meeting. (Camp Roosevelt.) Secretary, J. R. Hoy, Sanitary Engineer, 404 Hildebrandt Building, Jacksonville, Fla.

APRIL 5-7.—CHATTANOOGA, TENN.
Joint meeting. (Patten Hotel.) *American Water Works Association—Southeastern Section.* Secretary-Treasurer, W. H. Weir, 135 State Capitol Building, Atlanta, Ga. *American Water Works Association—Kentucky-Tennessee Section,* Executive Secretary, Howard D. Schmidt, 420 Sixth Avenue North, Nashville, Tenn.

APRIL 5-6.—WASHINGTON, D. C. (100)
Conference of State and Provincial Health Authorities of North America. Annual conference. (Harrington Hotel.) Secretary, Dr. A. J. Chesley, State Board of Health, St. Paul, Minn.

APRIL 5-6.—BOSTON, MASS. (1,500)
Massachusetts Safety Conference. Annual convention. (Hotel Statler.) General Manager, Lewis E. MacBrayne, 80 Federal Street, Boston, Mass.

APRIL 8-10.—BOISE, IDAHO. (300)
Pacific Northwest Regional Planning Commission. Conference. Chairman, R. F. Bessey, 220 Federal Court House, Portland, Ore.

APRIL 12-14.—AUGUSTA, GA.
Association of County Commissioners of Georgia. Annual convention. (Bon Air Hotel.) Acting Secretary-Treasurer, Tate Wright, Athens, Ga.

APRIL 14-16.—MONTREAL, QUE.
American Water Works Association—Canadian Section. Annual meeting. (Windsor Hotel.) Secretary-Treasurer, Dr. A. E. Berry, Ontario Department of Health, Parliament Buildings, Toronto, 5, Ont.

APRIL 16.—SALEM, N. J.
South Jersey Association of Water Superintendents. Regular meeting. (Salem County Club.) Secretary, Walter Spencer, 2707 Bethel Avenue, Merchantsville, N. J.

APRIL 19-22.—LEWISTOWN, MONT.
American Water Works Association—Montana Section. Annual meeting. (Burke Hotel.) Secretary, Herbert B. Foote, State Board of Health, Helena, Mont.

APRIL 21-23.—EXCELSIOR SPRINGS, MO.
Missouri Association of Public Utilities. Annual convention. (Elms Hotel.) Secretary, Jesse Blythe, Merchants Bank Building, 101 West High Street, Jefferson City, Mo.

APRIL 22-23.—MOBILE, ALA. (250)
Alabama League of Municipalities. Annual convention. (Battle House Hotel.) Executive Secretary, Ed. E. Reid, Montgomery, Ala.

APRIL 22-23.—PHILADELPHIA, PA.
Joint meeting. (Bellevue-Stratford Hotel.) *American Water Works Association—Four States Section.* Secretary, Carl A. Heckman, Department Engineer, Washington Suburban Sanitary District, Hyattsville, Md. *Pennsylvania Water Works Operators' Association.* Secretary-Treasurer, I. M. Glace, 22 South 22d Street, Harrisburg, Pa.

APRIL 26-29.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, 1615 H Street N. W., Washington, D. C.

APRIL 26-27.—WASHINGTON, D. C.
National Rivers and Harbors Congress. Annual convention. (Mayflower Hotel.) Secretary, Fred D. Beneke, 1128 Connecticut Avenue, Washington, D. C.

APRIL 29-30.—SPRINGFIELD, ILL.
American Water Works Association—Illinois Section. Annual convention. (Abraham-Lincoln Hotel.) Secretary-Treasurer, W. D. Gerber, State Water Survey Division, 406 Florida Street, Urbana, Ill.

MAY 6-7.—WILMINGTON, DEL.
Maryland-Delaware Water and Sewerage Association. Annual conference. Secretary, A. W. Blohm, 2411 North Charles Street, Baltimore, Md.

MAY 10-14—CHICAGO, ILL.
National Fire Protection Association. Annual convention. (Congress Hotel.) Managing Director, Franklin H. Wentworth, 60 Batterymarch Street, Boston, Mass.

MAY 17-21.—ATLANTIC CITY, N. J. (1,000)
National Recreation Association. Convention. (The Ambassador Hotel.) Administrative Secretary, Thomas E. Rivers, 315 Fourth Avenue, New York.

MAY 18-20.—MILWAUKEE, WIS.
National County Officers' Association. Congress. (Schroeder Hotel.) President George F. Breitbach, Court House, Milwaukee, Wis.

MAY 20-22.—VICTORIA, B. C.
American Water Works Association—Pacific Northwest Section. Annual meeting. (Empress Hotel.) Secretary, Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 23-29.—INDIANAPOLIS, IND.
American Public Welfare Association. Annual conference. Director, Fred K. Hoehler, 850 East 58th Street, Chicago, Ill.

MAY 23-29.—INDIANAPOLIS, IND.
Community Chests and Councils, Inc. Annual meeting. Executive Vice-President, Allen T. Burns, 155 East 44th Street, New York.

MAY 23-29.—INDIANAPOLIS, IND.
National Conference of Social Work. Annual conference. General Secretary, Howard R. Knight, 82 North High Street, Columbus, Ohio.

MAY 24-27.—PITTSBURGH, PA.
National Association of Purchasing Agents. Annual convention. (William Penn Hotel.) Secretary-Treasurer, G. A. Renard, 11 Park Place, New York.

MAY 31-JUNE 2.—DETROIT, MICH.
Joint meeting. (Hotel Statler.) *American Planning and Civic Association.* Executive Secretary, Miss Harlean James, 901-03 Union Trust Building, Washington, D. C. *American Society of Planning Officials.* Executive Director, Walter H. Blucher, 850 East 58th Street, Chicago, Ill.

MAY 31—JUNE 4.—CLEVELAND, OHIO.
Building Officials' Conference. Annual convention. (Hotel Statler.) Secretary-Treasurer, Wm. F. Hurd, Commissioner of Buildings, Indianapolis, Ind.

MAY 31-JUNE 2.—PITTSBURGH, PA.
Pennsylvania State Association of Township Commissioners. Annual convention. (William Penn Hotel.) Secretary-Treasurer, H. A. Fritschman, Eagle and Darby Roads, Upper Darby, Pa.

JUNE 1-4.—BOSTON, MASS.
The American Institute of Architects. Convention. Executive Secretary, E. C. Kemper, The Octagon, Washington, D. C.

JUNE 1-4.—NEW YORK.
Smoke Prevention Association. Annual convention. (Hotel Pennsylvania.) Secretary, Frank A. Chambers, 1411 City Hall Square Building, Chicago, Ill.

JUNE 7-11.—BUFFALO, N. Y.
American Water Works Association. Annual convention. (Hotel Statler.) Secretary, Harry E. Jordan, 29 West 39th Street, New York.

JUNE 17-19.—OTTAWA, ONT. (300)
Canadian Public Health Association. Annual meeting. (Chateau Laurier.) General Secretary, Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 21-25.—MILWAUKEE, WIS.
American Institute of Electrical Engineers. Annual summer convention. National Secretary, H. H. Henline, 33 West 39th Street, New York.

JUNE 21-26.—NEW YORK. (3,500)
American Library Association. Annual conference. (Waldorf-Astoria Hotel.) Secretary, Carl H. Milam, 520 North Michigan Avenue, Chicago, Ill.

JUNE 21-23.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. Annual conference. (Home Economics Building of the College Hotel—Nittany Lion.) Secretary, L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 22-24.—DIXVILLE NOTCH, N. H. (800)
New England Association of Fire Chiefs. Annual convention. (Balsams Hotel.) Secretary-Treasurer, John W. O'Hearn, 99 Main Street, Watertown, Mass.

JUNE 23-25.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Annual convention. (Pennsylvania State College.) Secretary-Treasurer, I. M. Glace, 22 South 22d Street, Harrisburg, Pa.

JUNE 27-JULY 1.—DETROIT, MICH.
National Education Association of the United States. Annual meeting. Secretary, Willard E. Givens, 1201—16th Street N. W., Washington, D. C.

JUNE 28-JULY 2.—NEW YORK.
American Society for Testing Materials. Annual meeting and exhibit. (Waldorf-Astoria Hotel.) Secretary-Treasurer, C. L. Warwick, 260 South Broad Street, Philadelphia, Pa.

JULY 5-13.—PARIS, FRANCE.
Housing and Town Planning Congress. International Federation for Housing and Town Planning. General Secretary, Donald C. L. Murray, 25 Bedford Row, London, W. C. 1, England. *International Housing Association.* General Secretary, Prof. Franz Schuster, Hansa-Allee 27, Frankfort a/M, Germany.

AUGUST 18-20.—DEARBORN, MICH.
American Water Works Association—Central States Section. Annual meeting. (Dearborn Inn.) Secretary, H. L. Nelson, 2122 Koppers Building, Pittsburgh, Pa.

OCTOBER 5-8.—NEW YORK.
American Public Health Association. Annual meeting. Executive Secretary, Dr. Reginald M. Atwater, 50 West 50th Street, New York.

OCTOBER 11-14.—AUSTIN, TEXAS.
American Water Works Association, Southwest Section. Annual convention. Secretary-Treasurer, Lewis A. Quigley, 3320 West Berry Street, Fort Worth, Texas.

OCTOBER 11-15.—KANSAS CITY, MO.
National Safety Council. Annual congress. Managing Director, W. H. Cameron, 20 North Wacker Drive, Chicago, Ill.

OCTOBER 18-21.—NEW ORLEANS, LA.
International City Managers' Association. Annual convention. Executive Director, Clarence E. Ridley, 850 East 58th Street, Chicago, Ill.

OCTOBER 20-23.—SACRAMENTO, CALIF.
American Water Works Association—California Section. Annual convention. (Senator Hotel.) Secretary-Treasurer, Carl M. Haskinson, Chief Engineer, Division of Water, Sacramento, Calif.

OCTOBER 19-22.—OKLAHOMA CITY, OKLA.
International Association of Fire Chiefs. Annual conference. (New Municipal Auditorium.) Secretary, James J. Mulcahey, 16 Franklin Avenue, Yonkers, N. Y.

NOVEMBER 4-6.—OMAHA, NEBR.
American Water Works Association—Missouri Valley Section. Annual meeting. (Fontenelle Hotel.) Secretary, Earl L. Waterman, University of Iowa, Iowa City, Iowa.

TAILOR MADE FOR THE JOB!

HEIL
HYDRAULIC DUMP UNITS
FOR
REFUSE AND
GARBAGE

Heil Hydraulic dump units for garbage collection service are tailor made for the job!—With years of experience to draw on and with a complete line of equipment to select from the Heil engineering staff is prepared to recommend equipment exactly suited to your needs—Use this advisory service—Discuss your problem with a Heil representative and get Heil recommendations before you buy—For complete facts address:

THE HEIL CO.
GENERAL OFFICES: 3000 W. MONTANA ST., MILWAUKEE
FACTORIES: MILWAUKEE, WIS.; HILLSIDE, N. J.
Branches and Distributors Everywhere

TRUEHEDGE COLUMNBERRY

Berberis thunbergi pluriflora erecta

The Most Sensational Plant Introduction in More Than a Decade

U. S. Plant Pat. No. 110
Propagation Rights Reserved

New Truehedge Columnberry-Common Barberry

COMPARE THESE 2-YEAR OLD PLANTS

Truehedge Columnberry is an upright type of barberry. Trimming is almost eliminated, saving much labor. Write for full details. Free Booklet.

HENRY C. MUSKOPF, Landscape architect says: "For an effective narrow, naturally upright growing plant, we know of none to equal its distinctiveness."

ROMAINE B. WARE, nationally-known Horticultural Editor and Writer says: "I have visited in a dozen states since the first of June and everybody seems to have a good word for Columnberry."

PAUL A. WELLS, Syracuse City Forester says: "It would appear that you have developed a very fine plant from the standpoint of appearance, good foliage and color, and low maintenance cost, and we will not hesitate to use more as the need rises."

L. E. JERMY, Chairman, Cleveland Section, A. S. M. E. says: "Trimming is entirely unnecessary, and it seems as though the characteristic of these columnberries in throwing shoots upright rather than sideways will render only very infrequent, if any, clipping desirable.

THE COLE NURSERY CO. (*Est. 1881*)
PAINESVILLE, OHIO
Wholesale catalog on request.
"Everything That's Good and Hardy"

The Murdock Outdoor Drinking Fountain

Ultra-modern, anti-freezing. Positively the most practical fountain for public service obtainable. Highly endorsed by over 800 municipalities alone.

Splendid for
PARKS, PLAYGROUNDS, ATHLETIC FIELDS, RECREATION CENTERS, OPEN SQUARES, PUBLIC STREETS

Modern type bubbler extends well above rim of basin so latter may overflow in case of drain stoppage thus preventing contaminated water reaching drinking supply.

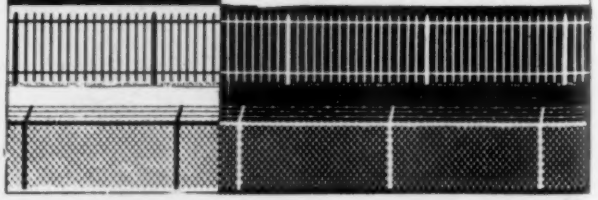
If you desire to modernize old Murdock fountains, write for complete information to

The Murdock Mfg. & Supply Co.
Cincinnati **Ohio**

Makers of Outdoor Water Devices Since 1853

FENCE *for every* PUBLIC PROPERTY *need*

Stewart FENCES
IRON AND CHAINLINK WIRE
New Catalog Sent Upon Request
THE STEWART IRON WORKS CO., INC.
421 Stewart Block Cincinnati, Ohio



News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Non-Clogging Pumps for Full-time Service

A study of so-called non-clogging sewage pumps by Kimball-Krogh engineers led them to certain definite opinions regarding the proper design for this type of pump. The trash which was found to be the most troublesome was stringy and strawy materials, hair and light rubber goods. The positions at which binding invariably occurred were between the wearing rings, between the shrouds of enclosed type impellers and the adjoining walls which formed the discharge casing, as well as between the edges of open-type impellers and the adjacent walls which formed the discharge casing. A less frequent source of trouble was the binding of large-size solids between the impeller vanes and the "cut-off" position of the discharge casing.

Based on these observations, the Kimball-Krogh Pump Division, Victor Equipment Co., 1010 East 62nd Street, Los Angeles, Calif., has developed the Victor-Kimball-Krogh non-clogging type of sewage pump. The impellers are of the "two-vane" semi-open type without wearing rings. The vanes are of concave cross-section and of a distinctive form, producing an efficient flow of liquids and solids. The hub disc, which forms the back of the impeller, has as large a diameter as practical to give maximum strength to the vanes. It corresponds to the shroud of an enclosed type impeller. Shallow vanes, which are practically an extension of the main vanes, are formed on the back of this disk, as shown in the accompanying illustrations.

To prevent solids from accumulating and binding between the open face of the impeller and the wall forming the discharge casing, a combination of three important features has been incorporated in these pumps: the lip formed on the suction plate extends into the eye of the impeller; the concave cross-section of the vanes; and the design of the angle and curve of the vane. The lip has a tendency to guide the solids toward the center of the vanes at the entrance of the impeller eye. In case some of the solids tend to flow toward the casing wall, the concave shape of the vanes will wipe them from the wall and back into the center of the flowing stream. These two features take care of any stringy or solid materials. Rubber or hair, which may not follow the center of the current, may be caught occasionally between the vanes and the adjacent casing wall. They do not have a tendency to roll up along the vanes and bind, as has been the case in previous designs. The particular angle, curve and shape of the vanes have a tendency to force such materials back into the center of the stream.

On the reverse side of the impeller, accumulation and binding are prevented by the shallow vanes on the side of the hub disc. These vanes have a pumping action similar to the main vanes, so that solids are prevented from flowing into the low pressure area at the back of the disc. When solids do work behind the disc while the pump is idle, they do not remain there long after the pump is again started. The vanes prevent an accumulation and gradually work the solids back into the main channel.

Balance holes, when used in trash pumps, allow a circulation of liquid between the impeller shroud and the adjacent wall which may permit the accumulation of solids and stimulate subsequent binding. Balance holes are not used in V-K-K impellers. Oversize thrust bearings are used to compensate for the slight difference in thrust due to the elimination of the holes. Similarly, wearing rings are eliminated, since they are felt to be actually detrimental to operating efficiency.

The discharge casings are of the full-opening type and will pass a sphere at any point of the volute of the size for which the particular pump was designed. There is no choking at the point of cut-off, which eliminates broken impeller vanes. Any solid which enters the impeller can pass through it and the discharge casing.

Asphalt Conferences Start Again This Year

The Asphalt Institute, New York City, has announced, following the recent meeting of its Board of Directors in New Orleans, that a National Asphalt Conference will be held this year, the time and place to be announced later. This annual meeting formerly known as the Asphalt Paving Conference, is to be broadened because of the importance of new uses for asphalt developed within recent years. In addition to serving as a clearing house for ideas on the building of more and better roads economically, this year's Asphalt Conference will deal also with asphalt in relation to flood control and the protection of harbors through asphalt jetties similar to the ones recently built in Galveston, Texas, and Astoria, Ore.

The Institute also announced the election of nine additional asphalt producing companies to membership, bringing the total membership up to thirty-five. Following is the list of the new members: Anderson-Prichard Oil Corp., Oklahoma City, Okla.; Col-Tex Refining Co., Oklahoma City, Okla.; Cosco Oil Co., Fort Worth, Texas; Cosden Oil Corp., Fort Worth, Texas; Magnolia Petroleum Co., Dallas, Texas; Exeter Refining Co., Long Beach, Calif.; M. M. McCallen Refining & Producing Co., Huntington Beach, Calif.; The Petrol Corp., Los Angeles, Calif.; San Fernando Refining Co., San Fernando, Calif.

THE FRONT, OR OPEN SIDE, OF THE IMPELLER OF A KIMBALL-KROGH SEWAGE PUMP

THE BACK, OR SHROUDED SIDE, OF THE IMPELLER OF A KIMBALL-KROUGH SEWAGE PUMP

19 CITIES ARE NOW USING DUAL PARKING METERS

★ MECHANICAL POLICEMAN who regulates parking, eliminates double parking and provides convenient parking.

Bakersfield, California
Clearwater, Florida
Dallas, Texas
El Paso, Texas
Forth Worth, Texas
Kansas City, Missouri
Knoxville, Tennessee
Long Beach, California
Meadville, Pennsylvania
Miami, Florida
Norfolk, Virginia
Oklahoma City, Oklahoma
Ponca City, Oklahoma
Providence, Rhode Island
San Antonio, Texas
Sharon, Pennsylvania
St. Petersburg, Florida
Toledo, Ohio
Tyler, Texas

DUAL PARKING METER CO.

Commerce Exchange Bldg. *Carl C. Magee, President* Oklahoma City, Okla.

Wherever Tar & Asphalt are Heated You'll find LITTLEFORD KETTLES

Be your needs large or small—for a few patches or a big construction job—there is a size and type of a Littleford Kettle that will do the job for you; do it better and at less cost. Sizes from 10 gallons to 1500 gallons capacity. Find out about them—send in this coupon today.

Littleford Bros., 500 E. Pearl St., Cin., O.
Send Price and Data on a Littleford Kettle of.....Gal. Capacity.
Name .....
Company .....
Address .....
City ..... State.....

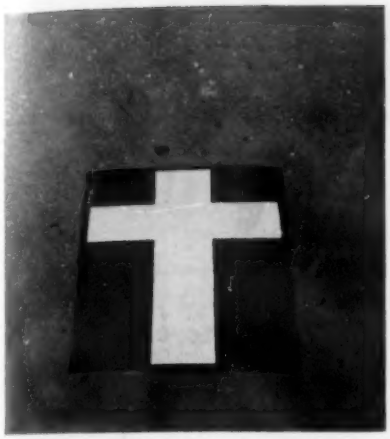
THE SIGN OF A GOOD HEATER — LB — LITTLEFORD BROS. CINCINNATI, OHIO

LITTLEFORD

Road Maintenance Equipment

SINCE 1900

LITTLEFORD BROS. 500 E. PEARL ST. CINCINNATI, O.



THE WAMBLU CROSS FOR MARKING TRAFFIC DEATHS

New Adhesives for Street Markers

Wamblu Corporation, 1378 East Ridge Road, Rochester, N. Y., has announced that the 1936 sales of Wamblu safety letters and markers were far greater than those of any year since 1929. This company states that its safety letters and markers have been continuously improved. Double-gum adhesive, heavier-weight canvas, and deeper impregnation of its special paint into the fabric, increase the effective life of the markers. Owing to the new adhesive the company is now guaranteeing its letters and markers for four months, instead of three.

The Wamblu laboratories have developed a special adhesive for their markers for use in winter, opening up a new field, for the markers can now be laid in cold temperatures. The markers, both strips and letters, are being used extensively by traffic departments, and can be placed on the pavement very quickly.

A new feature sign is a white cross on a black background to be applied to pavements at spots where fatal accidents have occurred. The company states that this warning has won favorable comment from motorists and traffic engineers.

New Safety Campaign of Indian Motocycle

Indian Motocycle Co., Springfield, Mass., has established a new department in its organization, to be known as the Division of Traffic Safety, and has placed Captain Phil. J. Dorr, formerly executive officer of the Pennsylvania Highway Patrol, in charge of it, with the title of Director of Traffic Safety. This Division has been established in the belief that intelligent police enforcement of driving regulations is one of the important remedies for the automobile accident situation.

Captain Dorr will spend most of his time visiting state and city police departments in all parts of the United States, and will cooperate with the traffic departments of the Automobile Manufacturers Association, the National Safety Council and other national bodies engaged in the study and correction of traffic conditions. Captain Dorr will concentrate most of his attention in the 28 states now using motorcycle patrols, and the 16 states in which such police groups are now in process of organization. He will offer them standardized courses of instruction, and a special study of local problems, and will deliver many lectures based on his work with the Pennsylvania Highway Patrol.

After 18 years of traffic research, the Indian Motocycle Co. believes that adequate and well-disciplined motorcycle patrols, out where they can be seen by motorists, are one of the most stabilizing influences in the curbing of reckless driving and traffic violations.

New Reflecting Markers Give Night Illumination for Center Stripes

A new device for vividly delineating the center stripe on city streets and suburban highways so that it is easily seen by day or night has been developed by the National Traffic Appliance Co., 3088 West 106th Street, Cleveland, Ohio. A marker consisting of a flat rubber blade 2½ inches wide by 4 inches high projects vertically from a steel casting base which is embedded in the pavement. The vertical blade or signal is hinged at the base, so that when run over it closes down into the base. An improvement on this C. R. R. marker is the new C. R. A. marker, which consists of a cast steel base flush upon the pavement held in position by two anchors. The vertical blade is 4 inches wide and 3¾ inches high and made of crucible bronze. When a vehicle has passed over it, the blade flips back to its normal vertical position. The blades are highway standard yellow, making them highly visible in daylight against any type of pavement. They are usually placed about 100 feet apart wherever road marking is desired, and they form a definite marking of the direction of the center stripe ahead.

THE LIFE-LINE TRAFFIC STRIPE MARKER WITH REFLECTING BUTTONS

The markers are even more visible at night than in the daytime, for patented reflectors are securely embedded in each face of the markers. They pick up and reflect the light from the headlights and appear as a series of small lamps ahead, showing curves in the road and making a definite line of light down the center of the road, warning a motorist to keep on his own side of the center line, which is the safe side.

Open-Type, Long-Range Aluminum Floodlights

Aluminum floodlights specifically designed to meet the requirements of football field lighting where grandstands, bleachers or other considerations make it necessary to locate the floodlights at a distance of 60 to 110 feet back of the side lines and yet provide high-intensity illumination along the far edge of the field, are made by the Benjamin Electric Manufacturing Co., Des Plaines, Ill. These "Long-Range" open-type Alzak aluminum floodlights also have other applications, such as on construction projects, where they are mounted not more than 275 feet from the area to be lighted.

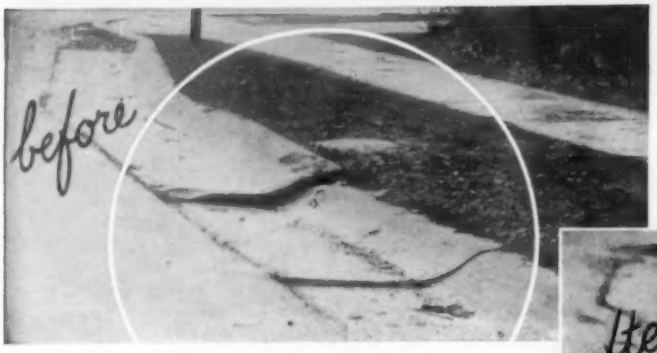
In football floodlighting, these lights direct the highest beam candle-power at the opposite side line with comparable intensities over the entire width of the field for uniformity. The candlepower falls off 50 per cent at a point 5 degrees above the angle of maximum candlepower to avoid glare in the eyes of spectators in the opposite stands. A deflector is provided which directs sufficient light, which otherwise would be wasted in the extreme upper areas of the field, into the stands below the units for ease in seeing to move about and to read programs.

A lateral distribution of sufficient breadth to assure ample overlapping of light throughout the length of the field is included in the design. These floodlights are mounted at heights of 55 to 70 feet when they are located from 60 to 110 feet back from the edge of the field.

The Benjamin floodlight has a special projector-shaped reflector of Alzak aluminum. A section behind the lamp is polished to produce a concentrated beam of high candlepower to carry over considerable distances, while the section in front of the lamp is etched to provide a certain degree of spread to the light rays. A deflector located above the lamp is etched Alzak aluminum. Three styles of removable hood-bracket assemblies are available: a cross arm for attachment to wood cross arms and flat surfaces; a pipe clamp for attaching to 1 to 2-inch pipe; and a pole cap to slip over the end of 1½ or 2-inch pipe. Lamps from 750 to 1,500 watts may be used.

THE BENJAMIN LONG-RANGE FLOODLIGHT

MUD-JACK METHOD
for raising concrete curb · gutter · walks · street



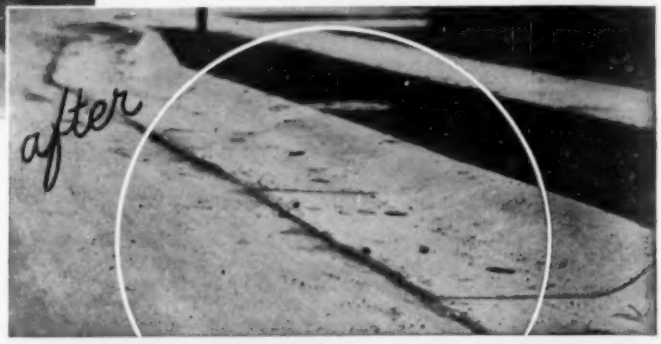
Sunken Curb and Gutter Marked for Reconstruction

but

THE MUD-JACK METHOD *corrected the settlement and saved the reconstruction costs*

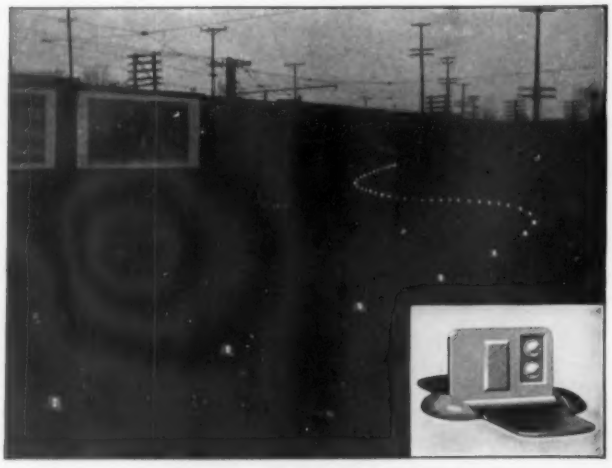
Save CURB — GUTTER WALKS — STREETS

The Mud-Jack method saves the slab —corrects the subgrade—eliminates pedestrian hazards. Write for data to reduce maintenance expense.



KOEHRING COMPANY

Pavers · Mixers · Shovels · Cranes
Draglines · Dumptors · Mud-Jacks
3026 WEST CONCORDIA AVE. MILWAUKEE, WISCONSIN



"LIFE LINE" REFLECTOR-TYPE TRAFFIC MARKERS

provide high, permanent visibility at surprisingly low cost. The little reflectors, which look like tiny electric lights when illuminated by automobile headlights, are clearly seen hundreds of yards ahead.

Write for information and name of nearest dealer.

NATIONAL TRAFFIC APPLIANCE CO.
3088 West 106th Street Cleveland, O.

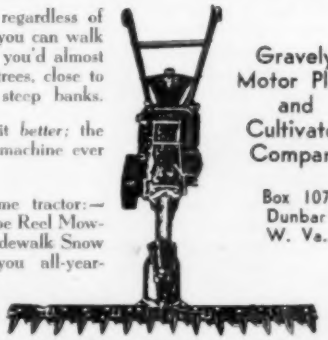
GRAVELY SICKLE MOWER

Cuts weeds or grass, regardless of height, on any ground you can walk on; up hill, too, where you'd almost have to crawl around trees, close to curbs, up and down steep banks.

Cuts *more*, and cuts it *better;* the most versatile mowing machine ever built.

Easily attached to same tractor:— the Gravely Rotary Type Reel Mower, also the Gravely Sidewalk Snow Plow — which gives you all-year-round use of your tractor unit.

Write for literature.



Gravely Motor Plow and Cultivator Company

Box 107
Dunbar
W. Va.

Make *Your* City a "CITY BEAUTIFUL"

Trees — Shrubs — Evergreens

We grow them all, and ship direct.

Some new plantings selected from our large stocks will make your parks and public grounds more beautiful than ever before.

Write for catalog.

BOYD NURSERY COMPANY
McMINNVILLE, TENNESSEE

Caterpillar Power Helped Louisville

Five compact diesel-electric generator sets of various sizes were rushed to Louisville, Ky., during the last stages of the flood, in a caravan of big truck trailers from the Peoria, Ill., plant of the Caterpillar Tractor Co. The truck caravan went first to Indianapolis, where it was met by an escort of U. S. Army transport trucks which took the much-needed engines across the river at Cincinnati, through Lexington and on into Louisville. On the outskirts of the flood city, the shipment was met by a corps of Caterpillar diesel and electric mechanics, electricians and engineers.

The shipment was complete, including switchboards, timbers to base up the units, complete accessory equipment and wiring, pulleys and cables to move the units into position, and an adequate supply of food and water. The company's working staff had been flown to the scene in special planes.

Louisville officials anticipated that it would be many days before the usual electric sources would again be in operation. This emergency power played an important part in meeting emergency power demands for relief headquarters, stations and hospitals, and to supply power for X-rays and other hospital apparatus.

Roy C. Whayne, the Caterpillar distributor in Louisville, got in contact with the Caterpillar Tractor Co. through a broadcast by station WHAS, asking that the request for these engines be relayed to the company's executives in Peoria. The message was received intact, but the company found that it had but few of these electrical generator sets on hand. One was taken from the company's display room, another was ripped up from the power plant at the Caterpillar Test Farm, two were disconnected and dragged out of the research laboratory, while the fifth one was grabbed as it came off the end of the assembly line. Peoria electrical houses were hurriedly canvassed for the special accessories needed, and the shipment was soon on its way.

Two of the sets were delivered to the Tube-Turns, Inc., plant as a result of that manufacturer's plea to put his distressed employees back to work. The area in which they lived was the most severely stricken in Louisville, and their homes were swept away. By putting these men back to work, their minds were taken off the tragedy they had just suffered, and at the same time they were made financially able to aid their wives and children.

Westinghouse Moves General Offices to Pittsburgh

The Westinghouse Electric and Manufacturing Co. will move its Pittsburgh office and some of its general offices now located at East Pittsburgh to the Union National Bank Building in Pittsburgh, Pa., about May 1. Occupying nine floors of the building, from the fifth to the thirteenth, the Pittsburgh district office, subsidiary district offices and headquarters offices, including executive, legal, industrial relations, sales and accounting departments, will be centrally located in the Union National Bank Building to facilitate their operations.

Water-Damaged Tracings Restored

In connection with the recent floods it may be of interest to city and county engineers to know that the Lithoprint Company, 41 Warren Street, New York, by use of the lithoprint process can reproduce water-ruined ink tracings or old, soiled and worn tracings on tracing cloth. This eliminates the necessity of redrafting and saves considerable time and expense. The cost for such lithoprints on tracing cloth is only slightly greater than the cost of the actual tracing cloth itself.

Pumping Plant Enlarged at Chino

The Chino Water Co., a pioneer water distribution organization at Chino, Calif., recently added the fifth Western natural gas engine to its station to drive pumps. The first was installed 20 years ago and is still rendering dependable service. The latest engine is a 160-hp unit operating at 200 rpm and is of the 2-cylinder horizontal type. This type of Western engine is one of the widely used models developed by the Western Engine Corporation, Los Angeles, Calif., a pioneer west coast engine builder. Over a quarter-million horsepower of this type engine is at work in irrigation, oil field and generator service.

International Harvester Managerial Promotions

Three managerial promotions in the sales department of International Harvester Co., 606 South Michigan Avenue, Chicago, Ill., have been announced. They are: the appointment of J. L. McCaffrey, former Manager of Domestic Sales, as Director of Domestic and Canadian Sales; the appointment of W. F. McAfee, former Manager of Domestic Motor Truck Sales, to succeed Mr. McCaffrey as Manager of Domestic Sales; and the appointment of P. V. Moulder, former Assistant Manager of the Eastern District, to succeed Mr. McAfee as Manager of Domestic Truck Sales.

M. S. A. Enlarges Plant in Pittsburgh

Mine Safety Appliance Co. will soon occupy the new, large building which has been added to its plant at Braddock, Thomas and Meade Streets, Pittsburgh, Pa. The new building is a modern steel structure of four floors. It measures 65 x 177 feet and adds 45,000 square feet to the previously existing floor area of the plant. Machinery and other equipment are now being installed, and the company expects to complete its expansion into the new building within thirty days.

Pitometer Promotes Tracy, Made District Engineer

Joseph E. Tracy has been appointed District Engineer to succeed the late Laurence C. Hough by the Pitometer Company, 52 Church Street, New York. Mr. Tracy's territory includes New England, northern New Jersey and New York State. His office is at 75 State Street, Albany, N. Y.

Mr. Tracy graduated from Yale University in 1924, where he studied civil engineering. Following a year of construction he joined the Pitometer Company, and he has been with that company continuously since that time.

C. M. Houck Elected Vice-President of P. T. L.

C. M. Houck, formerly Manager of the Inspection Division of Pittsburgh Testing Laboratory, Pittsburgh, Pa., has been elected Vice-President, succeeding A. R. Ellis, who was recently elected President.

Mr. Houck has been with the P. T. L. for the past six years and is widely known to technical men, public officials, and executives of the building industry through his association with the present company, and formerly with the Heine Boiler Co., of St. Louis, and U. G. I. Contracting Co., of Philadelphia.

New Highway Flare Protects Traffic

A new highway flare, known as No. 87, of the self-righting spherical type, has been added to its line of highway flare torches by the R. E. Dietz Co., 60 Laight Street, New York. This new flare, made of steel with a double-seamed leakproof joint, has a weighted bottom and is fitted with a carrying ring. It is equipped with a new, efficient windproof burner with a fixed rain-shield, fully licensed. The wick is held by a spiral wick feed which prevents the wick from dropping. The fuel used is kerosene or light fuel oil, operating with a $\frac{7}{8}$-inch round wick. It has a burning capacity of 24 hours.

THE NEW NO. 87 DIETZ HIGHWAY FLARE TORCH

Simplex-FIBREX
Makes Friends For You

Simplex-FIBREX Tree Wire is the answer to the demand for lower line stringing costs and better public relations. With it men can string wires right through trees without trimming. It insures constant line voltage and cuts to a fraction the number of complaints received by the customer relations department. This in itself is enough to earn the gratitude of the management.

In addition to its many other features Simplex-FIBREX has the built in staying qualities of a champion. The first installations were made in New England in 1909 and are still in satisfactory operation.

Simplex-FIBREX Tree Wire is a non-metallic, non-inductive, ozone-proof wire especially designed for overhead lines passing through trees and subject to abrasion from swaying limbs and branches. It resists rusting and rotting, as well as abrasion, almost indefinitely, and gives practically permanent, uninterrupted service. FIBREX Tree Wire is, therefore, particularly adapted to aerial power and lighting circuits, overhead police and fire alarm signal systems, and allied applications.

Porcelain insulators, wooden battens and dangerous steel tape is unnecessary when FIBREX is used and shorts, swinging grounds, leakage and actual hazards to people in the street are eliminated.

We will gladly send you complete literature and information upon request.

Simplex Wire & Cable Co., Sidney St., Cambridge A, Boston, Mass.

Simplex-FIBREX
The non-inductive, abrasive-resistant tree wire

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

$3,000,000 for Detroit Street Lighting

Better Lighting Tried on Nine Streets Proved Life-Saving Value

By L. J. SCHRENK
General Superintendent, Public Lighting Commission, Detroit, Mich.

THE budget item of $3,000,000 for improved street lighting, which was recently approved by the Public Lighting Commission, for request in the 1937-1938 budget, can readily be justified from the fatal automobile-accident reports compiled by the Detroit Police Department.

Analyzing these statistics over a period of the last seven years, one is impressed by the ever-increasing night fatality trend as compared with the decreasing day trend. The ratio of night to day of fatal accidents in 1930 and 1931 was within a fraction of 1.5 to 1, while in 1936 it reached the high figure of 2.4 to 1.

It is not the intention to convey the impression that this great increase in fatalities during street-lighting hours is entirely due to lack of illumination, as there are other contributing factors. A study of Police Department records of traffic fatalities since 1932 shows a tremendous increase during the hours of 1 A.M. to 3 A.M., probably due in considerable part to drunken drivers, as the drinking establishments close at 2 A.M. This increase is as follows:

NIGHT FATALITIES BETWEEN 1 A.M. AND 3 A.M.

Year	Number of Fatalities
1932	15
1933	29
1934	40
1935	54
1936	58

During the early part of the year 1936 a study was made of traffic fatalities, showing the worst section of streets in the city, where the fatality ratio of night to day was found to be 8 to 1.

There were nine sections of the main traveled thoroughfares, totaling 30 miles of street, where, in the two years of 1934 and 1935, the number of night fatal accidents reached a total of 100, as compared with 12 fatal accidents occurring during daylight hours. Owing to this tremendous increase of night fatalities over day fatalities, the Council approved a request of $145,500 for improved street lighting on the nine sections of thoroughfares. Three of these sections, on Fort, East Jefferson and Grand River Streets, were completed in September, 1936; the rest were completed in December, 1936, and there is still some of this program pending, awaiting materials.

THE RECORDS OF THE THREE SECTIONS OF STREETS COMPLETED IN SEPTEMBER, 1936, SHOW THAT DETROIT IS SAVING LIVES WITH THIS IMPROVED LIGHTING PROGRAM.

Figures taken from Police Department statistics give the records of these three streets, for the two years 1934 and 1935, and for the first eight months of 1936 before street lighting was improved, as follows:

ONE OF THE SECTIONS OF BETTER LIGHTING THAT DECIDED DETROIT AGAINST HALFWAY MEASURES
Targets on Grand River Avenue at Sorrento looking north, show how plainly even small objects are silhouetted by the new lighting

Location	Length of Street-Miles	Fatalities 1934-35 Night	1934-35 Day	8 Mos. 1936 Night	8 Mos. 1936 Day
1. Fort Street, W. Grand Boulevard to Woodmere	2¾	15	1	4	0
2. Grand River, Plymouth to Schaefer Road	1¾	9	0	2	0
3. Jefferson Avenue, Woodward to East Grand Boulevard	2½	7	0	3	1
Total	7	31	1	9	1

During these eight months of 1936 there were 129 traffic deaths caused by automobiles at night in the entire city. Nine of these deaths occurred upon the above-mentioned streets.

The improved street lighting was put in service during September, 1936, and during the following four months, while 122 people met with tragic death at night in the entire city, not a single automobile fatal accident occurred on this seven miles of improved street lighting.

One can draw his own conclusions from the above statistics, and no doubt eight or nine people are alive today owing to the adequate illumination which is now on these streets.

The photograph shows the visibility effected by the street lighting on Grand River Avenue at Sorrento, looking northward.

It is significant to note that the lack of proper illumination plays the major role as a contributing factor in night traffic accidents, and that adequate street lighting will materially reduce this tragic toll of human lives at night.

The $3,000,000 street-lighting program requested in the 1937-38 budget is proposed to be spent in those sections of the city where the traffic fatalities have been increasing, and mostly in sections and streets to replace the old, antiquated arc-lighting system of 20 to 25 years past. This lighting was ample before the advent of the modern automobile with the increased traffic and increased speeds, but today it no longer serves the purpose.

The kind of thought that has gone into the planning of this street lighting, summarized in the tabulation, is indicated by a police report on conditions on Woodward Avenue. This is a two-way street, each roadway 60 feet curb to curb, with street-car tracks between. The present lighting is with a row of ornamental posts along the outside curb of each street, with mounting height 22 feet and spacing 120 feet. The luminaires are equipped with 10,000-lumen incandescent lamps in pendant fixtures. During 1936 there were six fatalities at night and none during the day. This is a condensed statement by Patrolman Vincent Alshove:

"After observing conditions and questioning drivers, we are convinced that the most important hazard on this street is the lack of lighting. . . . If a person would attempt to cross this street in such weather (rainy) and after darkness, the motorist would invariably come within a distance that was dangerous before he observed a person in dark clothes walking. We tried this on ourselves. Sometimes the cars had to be waved with a flashlight or they might not have seen the officer in uniform. We have studied this situation for several rainy days and nights, and the installation of another row of lights along the street-car tracks is recommended."

There is no question regarding the necessity of increased lighting. The coming year's budget includes an item to duplicate the lighting on the outside curb by placing a similar row of street lights on a staggered arrangement along the inside curb.

The accompanying tabulation gives estimated costs of improved illumination scheduled for eight square miles bounded by 14th Street, Jefferson Avenue, Elmwood and North Grand Boulevard, together with plans for fifteen additional projects totaling more than 50 miles of streets.

COST OF IMPROVED LIGHTING
Underground Conduit and Foundations

	Unit Cost	City Labor & Mat.	WPA Labor	Total
534,000′ 1-duct	1.50	$160,000	$641,000	$801,000
2,850 foundations	30.00	21,000	64,500	85,500
21,400′ 4-duct	4.00	21,000	64,600	85,600
90 manholes	275.00	6,750	18,000	24,750
2,670 handholes	40.00	40,000	66,800	106,800
		$248,750	$854,900	$1,103,650
Other Items				
2,850 standards	120.00	342,000		342,000
2,850 Form 81 fixtures	30.00	85,500		85,500
2,320 Form 88 fixtures	36.00	83,520		83,520
2,850 safety coils	40.00	114,000		114,000
1,246,000′ 8 S. C. cable	.30	373,800		373,800
44 station regulators converted	400.00	17,600		17,600
9 new regulators	1,800.00	16,200		16,200
14 Cdr. and Pri. Cable		21,000		21,000
Remove 1,250 overhead arcs, poles, re-route lines		13,000	13,000	26,000
		$1,315,370	$867,900	$2,183,270
Engineering		35,000	9,000	44,000
Overhead and contingencies		159,630	61,100	220,730
Grand Total		$1,510,000	$938,000	$2,448,000

CONTEMPLATED FOR IMPROVED LIGHTING

Miles of Street	Year	Fatalities Night	Fatalities Day	Estimated Cost
	1935	2	0	
2½	1936	6	0	$47,500
	1935	2	1	
2	1936	5	1	7,500
	1935	7	0	
6½	1936	8	1	32,500
	1935	7	0	
4½	1936	3	1	25,000
	1935	9	0	
10	1936	7	3	125,000
	1935	3	0	
4½	1936	5	1	20,000
	1935	4	3	
6	1936	8	0	57,500
	1935	1	0	
1	1936	1	1	30,000
	1935	1	1	
3	1936	3	1	20,000
	1935	2	0	
3½	1936	9	4	30,000
	1935	2	2	
4	1936	4	1	30,000
	1935	4	0	
4	1936	1	3	30,000
	1935	0	2	
2	1936	3	1	15,000
	1935	1	2	
2	1936	2	1	15,000
		110	32	$485,000
				42,000*
				25,000†
Grand Total				$3,000,000

*Increase lighting on Livernois from 6,000- to 10,000-lumen lamps. † Miscellaneous intersections.

Better Lights Are Coming

A JOINT meeting of the Illuminating Engineering Society and the National Safety Council in the city of Newark, N. J., on January 14, illustrated again the national aspect of the street and highway lighting problem. As regards the highway part of this problem, R. E. Simpson stated it with a few figures. Roughly, there are 3,000,000 miles of roads, 300,000 miles of them of better quality, 50,000 miles of them improved, and 100 miles of them lighted. This is the harvest to date of the long, hard drive for highway safety at night.

What is the reason for this? There is no argument about the value of highway lighting. Consider the case of Westchester County, N. Y., which several years ago discontinued lighting of its parkways. With lighting, the ratio of day to night fatalities has been 1 to 2.2. When the lighting was reduced, the ratio became 1 to 3.7; and with no lights, 1 to 3.8. Now, with the lights restored, the ratio is 1 to 1.4.

The obvious answer must be that state officials do not believe that widespread highway lighting will save enough lives to warrant the expense. There is just so much money to spend and plenty of ways to spend it, and the highway lighting idea is comparatively new as a statewide and nation-wide proposition. The necessary preliminary step, of acquainting the public with the advantages of rural lighting, is now in pretty full swing in a number of states. In the lighting of rural intersections and in continuous lighting of state routes passing through municipalities, the states are confronted by an immediate program of considerable proportions.

Municipal street lighting is something else again. It involves not only safety, but comfort, convenience, pleasure and better business as well. During the depression years the brakes were put pretty closely on lighting expenditures. Now, with larger tax collections due not only to better times but to better assessing and billing methods as well, a new spirit of interest toward street lighting is evident. Another powerful factor in this interest is the universal demand for a reduction in traffic accidents, and a recognition that good street lighting is one sure way to reduce them.

Two stimulating municipal programs have recently been announced. St. Louis will spend $1,200,000 for a new street-lighting system. Detroit, long a "horrible example" of the price of light curtailment, has included in the 1937 budget an item of $3,000,000 for street lighting.

The prospect is distinctly for brighter streets.

Night Hazard Growing Worse; The Remedy

By H. C. DICKINSON
Chief, Division of Heat and Power, Bureau of Standards

IN some localities it is six times as dangerous to drive between 1 o'clock and 5 o'clock in the morning as it is by daylight, and two or three times as dangerous to drive at night as it was four years ago.

The oft-repeated warning that driving is becoming faster and more reckless and must be curbed needs a square look in the face. Children are becoming safer, all pedestrians are becoming safer, even fast driving by daylight is becoming safer as well as faster despite the hazards of meeting other cars and passing roadside obstructions. The only important feature that is getting more dangerous is driving at night. This is not because cars are faster. Only rarely can one use the speed capacity of any car at night.

It is because poor light and bad vision increase the chances of hitting the cars which we meet or hitting roadside obstructions in trying to avoid them that night driving is dangerous.

This all means that we never should have tolerated dense traffic in opposite directions on the same pavement. Wherever four traffic lanes are called for, traffic in the two opposite directions should be separated. Then opposing headlights would not greatly interfere with each other.

This is the kind of main highway we should demand and should get wherever there is traffic to justify more than a two-lane road:

A. Traffic in opposite directions should be entirely separated.

B. Culvert ends, telegraph poles, trees and other standing obstructions near the pavement should be cleared away so far as this is possible. Roadside grading should be safe.

C. Wherever pedestrian travel is common, walks should be provided—for instance, between the two roadways—so that persons may walk in safety.

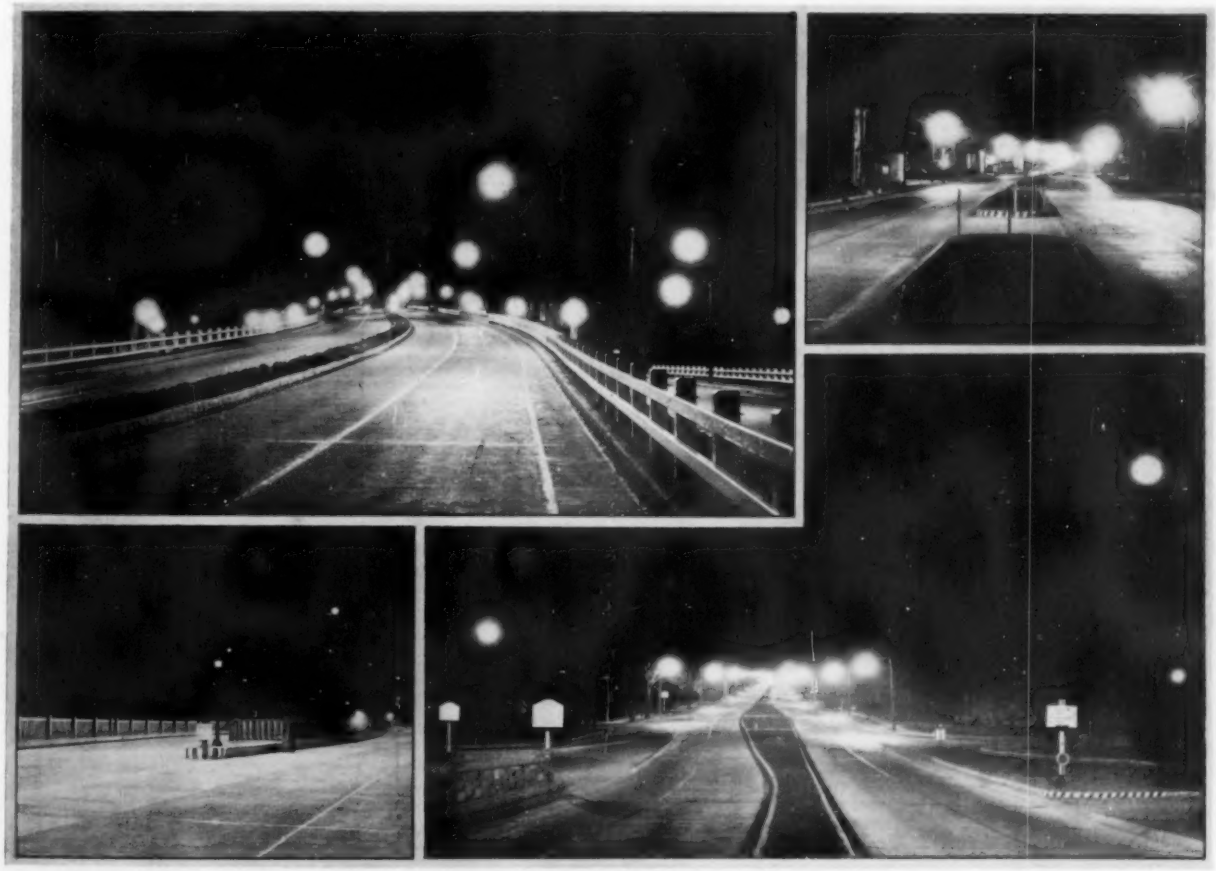
D. Parking of vehicles close to the pavement should be prevented.

E. There should be no avoidable crossroads on main thoroughfares.

If these things were done, there would be small chance of hitting anything more dangerous than another car going in the same direction. Such accidents are rare and not often very serious.

With such roads there would be no head-on collisions and no dodging to avoid them. Crossroads would be rare and protected. If we traveled off the road in passing a truck, there would seldom be anything to hit, no needless telegraph poles, culvert ends, trees or rocks. There would be no pedestrians in the road to strike at night, and no serious glare from meeting headlights.

How one could get seriously hurt on such a road is hard to see. The gruesome pictures we see of wrecked "death cars" show the results of collisions. On the roads we ought to have, there seldom would be anything with which to collide.



COMBINING VISIBILITY AND SEPARATE LANES

The larger two views are of the Boston-Worcester Turnpike at Newton, Mass. The upper left is Chestnut Street overpass with 6,000-lumen lamps mounted at 22 feet on 8-foot bracket and spaced 140 feet apart. Lower right looks toward Boston from Center Street overpass. Upper right is the same turnpike but at Shrewsbury, with 10,000-lumen lamps, same mounting height and spacing. Lower left is N. J. super highway between Jersey City and Newark. All lighting is with General Electric form 52 luminaires with 11-inch Holophane rippled-glass refractors

The American City Professional Service Directory

ACKLEY, BRADLEY & DAY
Consultants
Specializing in the Design and Maintenance of Swimming Pools
Iron and Manganese Removal from Water Supplies by Catalysis
Garbage Incineration
Starr Building, Pittsburgh, Pa.

E. T. ARCHER & CO.
Consulting Engineers
Steam and Hydraulic Power Plants, Water Sewerage, Paving, Roads, Appraisals, Testimony, Reports.
New England Bldg. City Bank Bldg.
Kansas City, Mo. Shreveport, La.

JAMES M. CAIRD
Assoc. Am. Soc. C.E.
CHEMIST and BACTERIOLOGIST
OFFICE AND LABORATORY
Cannon Building, Troy, N. Y.
Water Analysis and Tests of Filter Plants

JACOB L. CRANE, JR.
Municipal Development Engineers
CITY AND TOWN PLANNING ZONING
Municipal Utilities
Land Subdivisions. Housing
Wrigley Building, 400 N. Michigan Ave.
CHICAGO

ALBRIGHT & FRIEL, INC.
Consulting Engineers
Chester E. Albright Francis S. Friel
Water Supply and Purification
Sewerage and Sewage Disposal
Industrial Waste and Refuse Disposal
Investigations Valuations Reports
246 South Fifteenth Street
Philadelphia, Penna.

Waterweeds Removed
easily and effectively from any lake, pond, reservoir, river, etc., for Water Supply, Parks, etc.
Write for particulars.
ASCHERT BROS.
Box 155 La Canada, Calif.

Chester, Campbell, Davis & Bankson
The Chester Engineers
Water Supply and Purification, Sewerage and Sewage Treatment, Power Development and Applications, Valuations and Rates.
130 Seventh St., Pittsburgh, Pa.

ELECTRICAL TESTING LABORATORIES
Electrical, Photometrical and Mechanical and Chemical Tests. Factory Inspections of Electrical Apparatus and Supplies.
80th St. and East End Ave., New York, N. Y.

ALVORD, BURDICK & HOWSON
John W. Alvord — Chas. B. Burdick
Donald H. Maxwell — Louis R. Howson
Water Works — Sewage Disposal
Water Purification — Drainage
Flood Relief — Appraisals
Sewerage — Power Generation
CIVIC OPERA BLDG., CHICAGO, ILL.

BARKER & WHEELER
36 State Street — Albany, N. Y.
11 Park Place — New York City
Water Supply — Public Utility and Industrial valuations
Sewerage — and Rates
Sewage Disposal — Power

Chicago Testing Laboratory
Incorporated
affiliated Chicago Paving Lab., Inc.
Hugh W. Skidmore — Gene Abson
MATERIALS — PROCESSES — STRUCTURES
Consultation, Inspection, Testing, Design, Research, Investigation
536 Lake Shore Drive — Chicago

FAY, SPOFFORD AND THORNDIKE
Consulting Engineers
Port Development—Bridges—Water Supply—Drainage—Sewerage—Fire Prevention
11 Beacon St. — Boston

AMBURSEN CONSTRUCTION CO., INC.
Engineer-Constructors
Ambursen Dams
296 Madison Avenue, New York
Alexander Building, San Francisco

Barstow & LeFeber, Inc.
Sanitary Engineers
E. D. Barstow — Alfred LeFeber
Specializing in Water Supply, Sewerage and Drainage Works
Sanitary Laboratory
31 N. Summit St., Akron, Ohio
609 American Bldg., Cincinnati, O.

THE J. M. CLEMINSHAW CO.
Appraisal Engineers
TAX EQUALIZATION SERVICE
Union Trust Bldg., Cleveland, O.
175 Fifth Avenue, New York City

THE WILLIAM T. FIELD ENGINEERS, INC.
Consulting Engineers
William T. Field — Arthur H. Emerson
Sewerage Systems and Treatment, Water Supply and Purification, Investigations, Appraisals, Design, Supervision, Laboratory
Flower Bldg., Watertown, N. Y.

The American Public Utilities Bureau
Organized to assist municipalities and public groups in utility valuations, rates, franchises, accounting, and surveys.
JOHN BAUER, Ph.D., Director
280 Broadway — New York City

BLACK & VEATCH
Consulting Engineers
Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations and Reports.
4706 Broadway, Kansas City, Mo.

WILLIAM R. CONARD
BURLINGTON, N. J.
Inspections and Tests of Materials, Reports, Appraisals, Designs, Specifications.

WALTER H. FLOOD & CO.
Chemical Engineers
Paving and Engineering Materials—Inspections—Reports—Specifications—Physical and Chemical Tests—Design and Control of Asphalt and Concrete Mixtures.
822 E. 42nd St. — 321 Daniel Bldg.
Chicago, Ill. — Jackson, Miss.

MUNICIPAL INCINERATORS and PLANTS
THE AMSLER-MORTON CO.
Industrial
Engineers and Contractors
Fulton Building, Pittsburgh, Pa.

Burns & McDonnell Engr. Co.
Consulting Engineers Since 1897
Waterworks, Light and Power, Sewerage, Reports, Designs, Appraisals, Rate Investigations.
Kansas City, Mo. 107 W. Linwood Blvd.
Cincinnati, Ohio, 307 East Fourth St.
Albany, N. Y., 11 North Pearl St

Consoer, Townsend & Quinlan
Water Supply—Sewerage—Flood Control and Drainage—Bridges—Ornamental Street Lighting—Paving—Light and Power Plants. Appraisals.
Engineering Bldg. — Chicago

FULLER AND EVERETT
Civil, Hydraulic and Sanitary Engineers
W. E. Fuller — C. M. Everett
WATER SUPPLY & SEWERAGE
22 E. 40th St. — New York

ABRAMS AERIAL SURVEY CORP.
CITY MAPS — PLAN MAPS
TOPO MAPS — TAX MAPS
AIR MAPPING SINCE 1922
THE ABRAMS CONTOUR FINDER MEASURES THE HEIGHT
ASK FOR DEMONSTRATION—SAMPLES AND PRICES
Lansing, Mich.—Washington, D. C.—San Juan, Puerto Rico

FULLER & McCLINTOCK
Engineers
F. G. Cunningham — Ernest W. Whitlock
Elmer G. Manahan, H. K. Gatley.
Sewage Treatment, Sewers, Waterworks, Purification, Drainage, Waste Disposal, Valuations
11 Park Place — New York

THE PITOMETER COMPANY
Engineers
Water Waste Surveys — *Trunk Main Surveys* — *Water Distribution Studies*
Penstock Gaugings
52 Church Street — New York

GASCOIGNE & ASSOCIATES
Consulting Sanitary Engineers
G. B. Gascoigne — A. A. Burger
W. L. Havens — F. W. Jones
C. A. Emerson, Jr. — F. C. Tolles
Water, Sewage, Garbage and Industrial Waste Problems—Valuations and Rate Investigations.
Cleveland, Leader Bldg. — New York City, Woolworth Bldg.

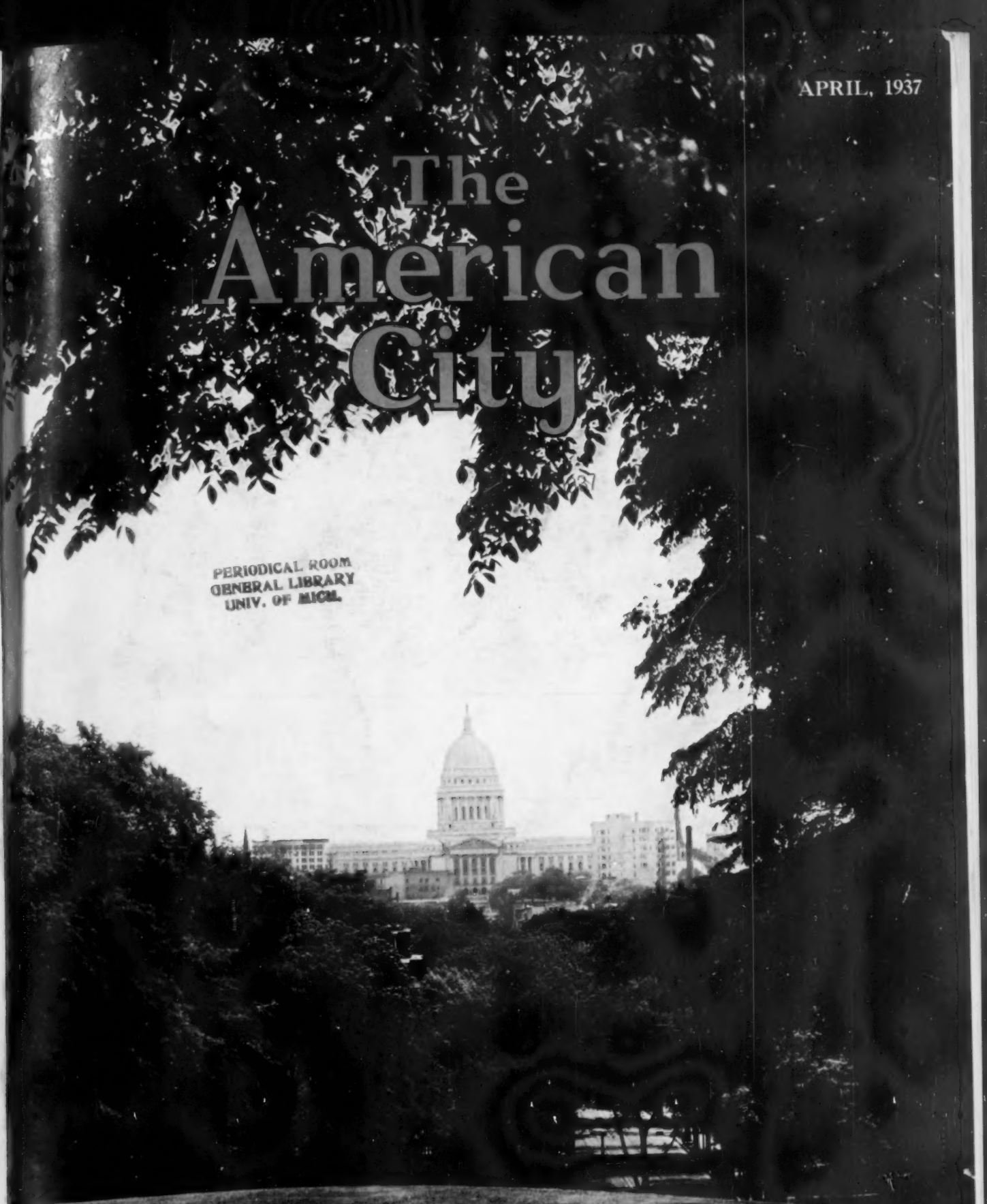
PITTSBURGH TESTING LABORATORY
INSPECTING ENGINEERS AND CHEMISTS
PITTSBURGH, PA.
Branch Offices in Principal Cities

Mortimer M. Gibbons
Sanitary Chemist
Chemical and Bacteriological Analyses of Water, Sewage and Industrial Wastes. Supervision of Water and Sewage Treatment Plants.
961 Frelinghuysen Avenue
Newark, N. J.

APRIL, 1937

The American City

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.



View in the City of Madison, Wisconsin
Looking Eastward Along State Street
Ending at the State Capitol